

Knowledge-Management Intranets

Basic Principles of Information Architecture

- ❖ The Imperative of Information Management
- ❖ Facilitating Information Accessibility
- ❖ Creating Knowledge-Sharing Incentives
- ❖ Maintaining Content Quality and Relevance
- ❖ The Role of the Center



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Executive Summary:

Creating and Maintaining Corporate Information Architectures

The Underappreciated Importance of Information Architecture

Fueled by the wide variations in success of corporate knowledge-management initiatives, legions of executives remain healthily skeptical about the much-hyped but still-nascent discipline of enterprise knowledge management. Despite significant investments in technology, many corporate intranets are still plagued by users' inability to find pertinent information, employees' unwillingness to contribute content and a preponderance of outdated and irrelevant documents. Working Council research finds that the low usage and benefit realization of many knowledge-management initiatives result less from mismanagement of technology than from subscale investment in content management and inattention to what we will term "information architecture"—the design and maintenance of information organization, labeling, navigation and indexing systems.

Three Dimensions of Enterprise Information Architecture

Extensive research into dozens of knowledge-management pioneers among the corporate and consulting communities reveals three critical imperatives for the effective design and administration of browser-enabled repositories of corporate knowledge:

1. *Facilitating Information Accessibility*

Best-practice companies provide multiple (and redundant) pathways to information that support the various searching and browsing styles of the different user constituencies and mirror the ways in which employees use information to do their jobs.

2. *Creating Knowledge-Sharing Incentives*

In order to overcome employee resistance to contribute information, intranet exemplars recognize and reward employees' knowledge-sharing behaviors proactively, by giving formal authorial recognition to contributors and by factoring knowledge-sharing activities into staff performance reviews.

3. *Maintaining Content Quality and Relevance*

The best intranet practitioners ensure that information does not become irrelevant or outdated by instituting content management and review procedures and vesting knowledge-management teams with responsibility for identifying, codifying and validating best practices and periodically reviewing intranet content.

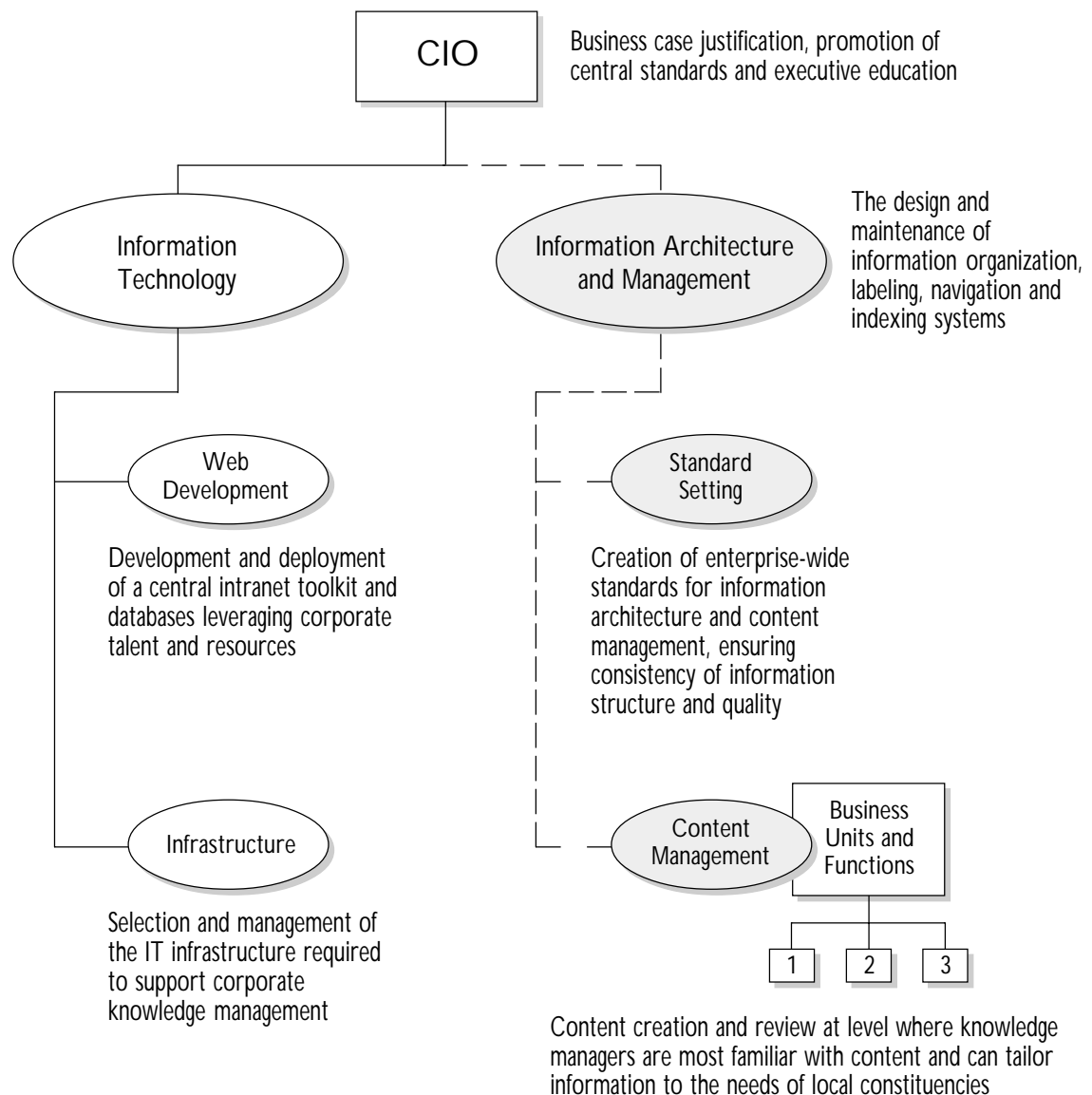
While this research focuses primarily on intranets—considered to embody the most advanced vehicle for corporate knowledge management—the lessons are also applicable to extranets or Internet sites.

The study contains a step-by-step intranet implementation guide and ends with a glossary of terms for easy reference.

Principled Roles for the Corporate Center

While Working Council research indicates that information architecture and management are critical to the success of corporate knowledge-management initiatives, they are rarely disciplines that CIOs wish to add to their ever-burgeoning list of responsibilities. That said, inattention to these critical disciplines can defeat the CIO's best efforts at providing the technical infrastructure and tools for enterprise knowledge management. Best-practice firms are employing professionals from the emerging field of information science and creating new business functions to design information architectures, manage content and coordinate activities of business units with centrally created knowledge-management standards and procedures. Typically, these new functions collaborate closely—but do not report directly—to the corporate IT function.

Knowledge Management: The Corporate Role



A New Era in Corporate Knowledge Management

Using the latest information storage-and-retrieval tools, many corporate IT departments are currently deploying browser-based knowledge-management systems in an effort to consolidate corporate information resources and make them accessible to all employees. These efforts herald a new era in corporate knowledge management focused on the dissemination of knowledge across the entire enterprise rather than within the corporation's functional or divisional "silos."

From Functional to Corporate Knowledge Management

"Siloed" Knowledge

Information "silos" determined by organizational boundaries—business unit, division, function, etc.

Application centered

Navigation via operating and file systems

Reliant on internally generated information

Information shared via E-mail attachment



Enterprise Knowledge

Enterprise-wide integration of information resources

Document centered

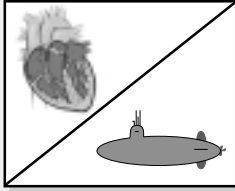
Navigation via hypertext browser links and search engines

Integrates external information from strategic partners, suppliers, customers and third-party sources

Information shared via "pointers" to intranet files

Building Blocks of Effective Information Architectures

The following list provides a basic toolkit for effective information architecture, drawn from the Working Council's research into the practices of the most progressive knowledge-management intranet practitioners. CIOs engaged in efforts to harness enterprise information resources may wish to consider any or all of these best practices, designed to improve information accessibility and distribution across the enterprise.



Thesaural Browsers

Page 16

Browsers generate lists of related terms and resources, allowing users to take advantage of otherwise unexpected associations between seemingly unrelated information sources and types.



Personalized Intranet Portals

Page 18

The creation of a customizable intranet interface allows employees selective access to information resources required to perform their jobs, enables employee automation of simple, routine tasks and creates a vehicle for a central information-management body to "push" relevant content to distributed users in real time.



Knowledge-Sharing Inclusive Performance Reviews

Page 26

Incorporation of a knowledge-sharing component into the performance reviews of employees explicitly links knowledge-sharing behaviors with compensation.



Federal Knowledge Management

Page 33

Best-practice teams in business divisions or individual business units leverage their subject expertise to discover and codify best practices, which are then passed on to a corporate knowledge-management group that facilitates the propagation of best practices across the enterprise.



Information-Expiration Mechanisms

Page 38

Intranet content is automatically identified by date of creation and/or last modification; dated documents are flagged and routed to their authors, who review them for relevancy and decide to archive, delete, modify or reinsert the documents back into the corporate database.

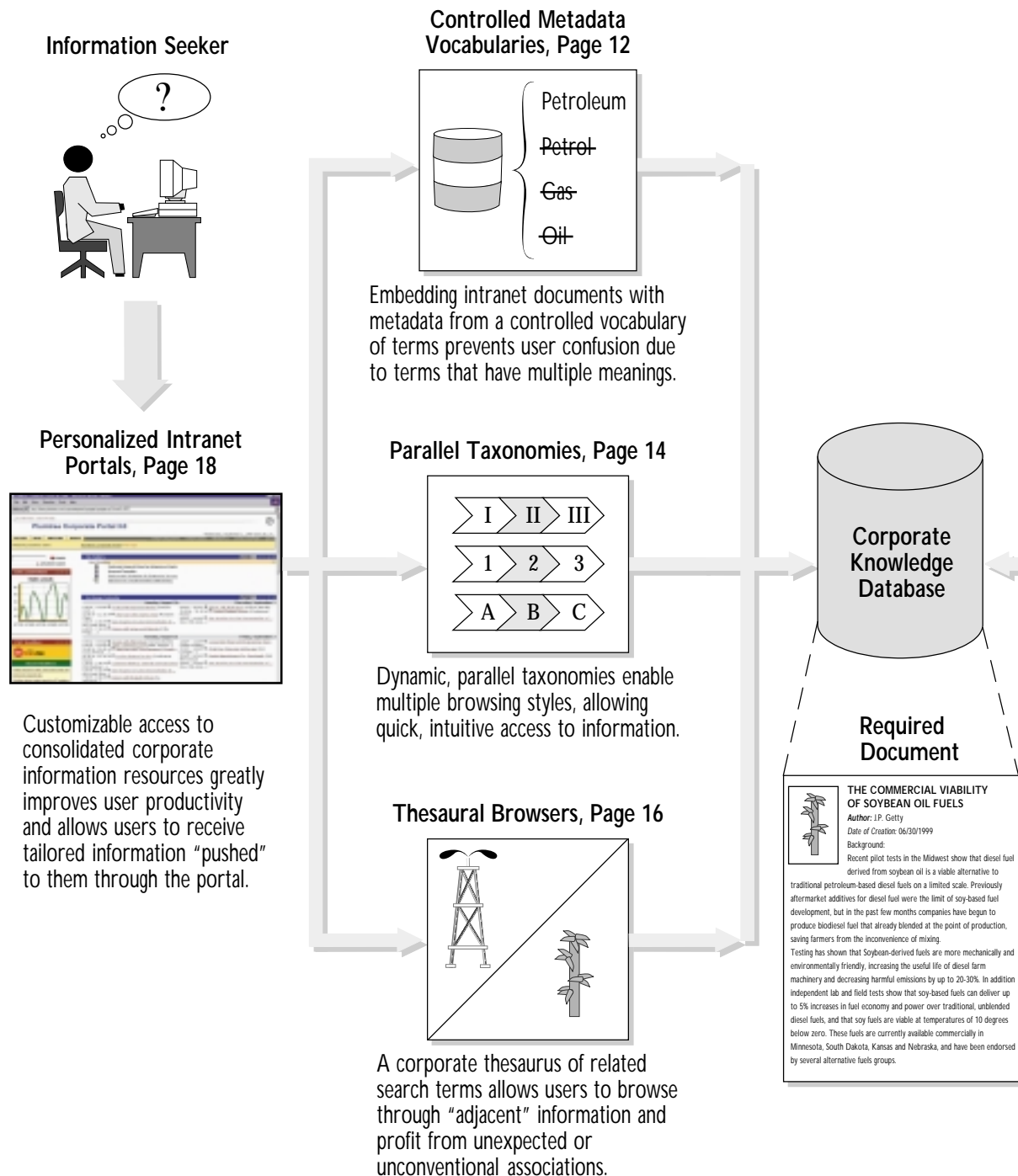
Supporting Multiple Information Pathways

Facilitating Information Accessibility

Seeker accesses company information resources via personalized intranet portal...

...that allows seeker to utilize hybrid searching and browsing tools...

...to find desired documents or resources...



Seeking

Collecting and Cataloging Quality Information

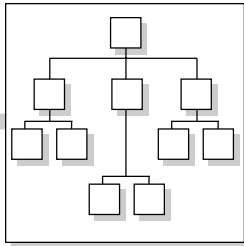
Maintaining Content Quality and Relevance

...that have been checked for integrity and relevance by knowledge managers throughout the organization...

Creating Knowledge-Sharing Incentives

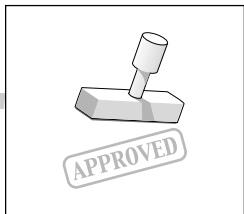
...and have been authored by staff that are actively recognized and evaluated on the basis of knowledge sharing.

Federal Knowledge Management, Page 33



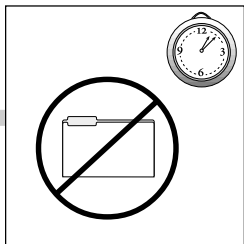
Divisional best practice teams identify and codify best practices while corporate knowledge management groups set standards for information architecture and technology.

Content-Validation Protocols, Page 36



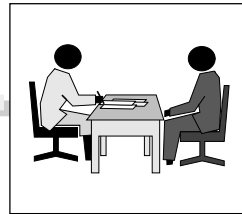
Local content validators check the quality of intranet submissions.

Information-Expiration Mechanisms, Page 38



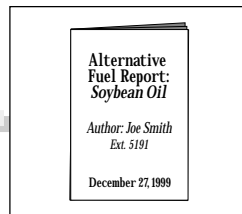
Dated intranet content is proactively identified and routed to local content managers for retirement, update or validation.

Knowledge-Sharing Inclusive Performance Reviews, Page 26



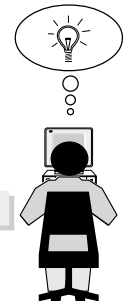
Including knowledge-sharing metrics as a significant component of staff performance evaluations formally rewards knowledge-sharing behavior.

Embedded Authorial Recognition, Page 28



Authorial recognition encourages staff to contribute tacit knowledge in exchange for the chance to build internal firm "capital."

Information Author



Authoring



Essay

The Imperative of Information Management

- The Opportunity Costs of Poor Information Management
- Underinvestment in Unstructured Information
- The Rise of Corporate Information Science

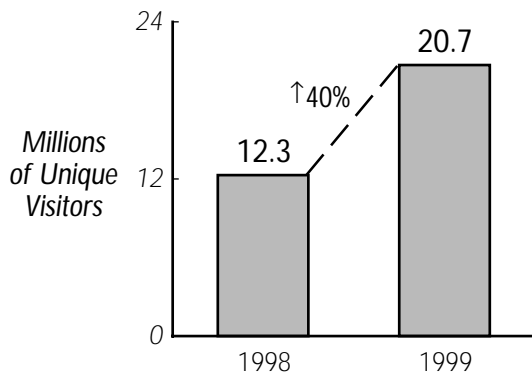
A New Information-Demand Management Challenge

Even though information classification, storage and retrieval technologies are becoming more powerful, internal corporate information is often becoming harder to find. Typically, information remains fragmented across multiple locations and is poorly indexed and cataloged. Consequently, searching has become a dual task: identifying the appropriate information source, then locating the desired piece of information. At the same time, staff expectations of greater access to internal information are being fueled by the ease of access to external information provided by the Internet, creating a new information-demand management challenge for the CIO.

While appetite for Web-based information is growing...

Number of Unique Visitors Using Internet
Both at Home and at Work in the U.S.

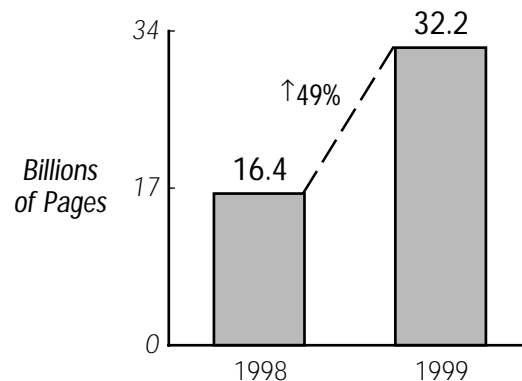
(October 1999)



Source: Media Metrix, http://www.mediametrix.com/PressRoom/Press_Releases/11_22_99.html (22 November 1999).

Billions of Web Pages Viewed, U.S. Internet

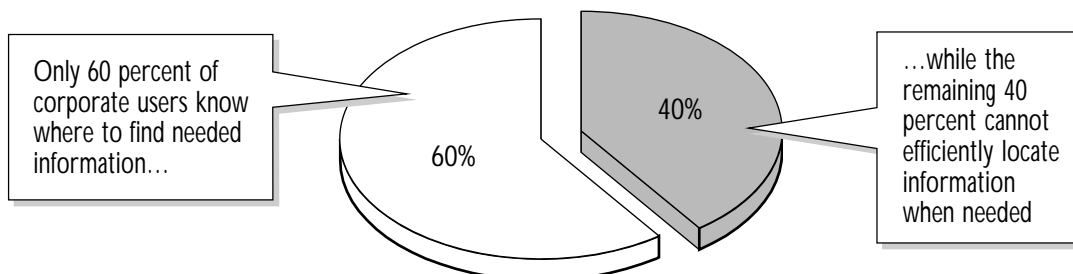
(October 1999)



Source: Media Metrix, http://www.mediametrix.com/PressRoom/Press_Releases/11_22_99.html (22 November 1999).

...information within corporations is often difficult to find

User Uncertainty: Where to Find Corporate Information?



Source: Stenmark, Dick, "Identifying Problems with E-mail-Based Information Sharing," *Proceedings of IRIS Working Council research*.

The Opportunity Costs of Poor Information Management

The experience of corporate exemplars demonstrates the surprisingly high opportunity costs of poor information management, despite monumental efforts at implementing progressive information-management practices.

Mini Cases: Annual Productivity Losses of Over \$10 Million



Prior to its intranet reengineering in 1997, Ford conducted a survey of its 100,000+ person user base. Employees stated that they could locate only 15 percent of the information on the company intranet that they required to perform their daily work.

Source: Ford Motor Company.



Amerada Hess surveyed its employees and found that they were spending 35 percent of their productive time searching for information on the corporate network or the Internet.

Source: Reuters Limited, "The Reuters Guide to Good Information Strategy Case Study: Amerada Hess."



Sun's usability experts calculated that 21,000 employees were wasting an average of six minutes per day due to inconsistent intranet user interface designs and navigational structures. When lost staff time was multiplied by staff salaries, the estimated productivity loss exceeded \$10 million per year.

Source: Morville, Peter, "Calculating the Cost of a Large-Scale Web Site," *webreview.com* (8 August 1997); Working Council research.

Underinvestment in Unstructured Information

Corporate information resources contain two distinct types of information: structured information, such as transactional invoices or financial data, and unstructured information, such as memoranda, drawings and multimedia files. Most of the information commonly considered as “corporate knowledge” is unstructured, and thus the key to the development of a robust knowledge-management intranet is harnessing the company’s unstructured information and making it easily accessible. Unfortunately, investments in information management often follow the traditional IT bias toward spending on systems to manage structured information, neglecting the vast majority of the unstructured information that corporations produce.

Corporations produce both structured and unstructured information...

Structured Information (Data)

Customer_ID	Order_ID	Order_Date	Order_Amount
Smith24Z22	19990621A3	1999/06/21	\$243.00
Kamar54F65	19990621D4	1999/06/21	\$764.00
Miller68G34	19990621F6	1999/06/21	\$563.00

Organizing Metaphor

Repeated and relatively inflexible schema, such as the rows and columns of a database

Common Technologies

Databases

Representative Applications

ERP, Data warehouses, Financial systems

Unstructured Information (Documents)



Organizing Metaphor

Flexible schema, such as word-processing document templates or multimedia files; may have repeating and required classes of information, such as an introduction to a report

Common Technologies

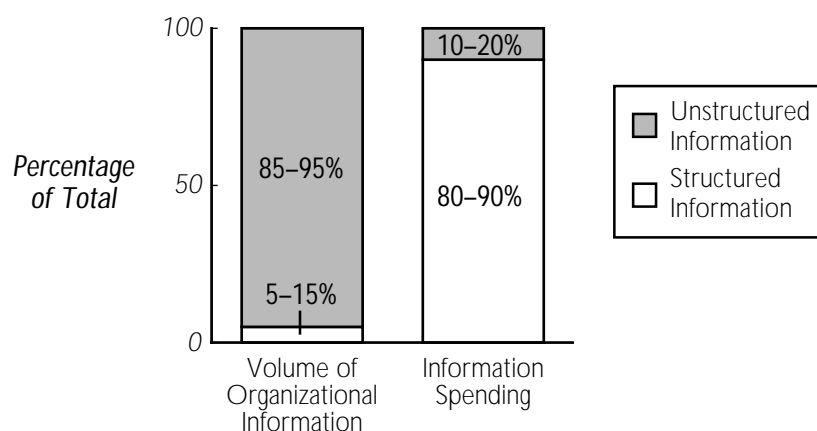
Office productivity software, document management systems

Representative Applications

Correspondence, Report writing, Technical manual production

...but most corporate spending is focused on structured information

Information Management Spending vs. Information Type



Source: Teltech Resource Network Corporation; Working Council research.

The Rise of Corporate Information Science

In response to the multiple challenges of managing increasing amounts of unstructured information, progressive companies are deploying new information-management capabilities toward the creation and maintenance of robust knowledge-management systems. Although these systems take many forms, the most advanced vehicle for the enterprise-wide dissemination of corporate knowledge—and hence, the focus of this study—is the intranet. However, the practices profiled here are applicable to any knowledge-management system and can also be extrapolated to extranets or Internet sites.

The difficulties inherent in managing unstructured information...

The Challenges of Managing Unstructured Information

The management of unstructured information presents several daunting challenges for corporations.

- **Difficulty of categorization**—Unstructured documents often share few structural attributes.
- **Multiplicity of file formats**—Unstructured information is generally stored in diverse formats, making reconciliation an expensive and time-consuming proposition.
- **Distributed ownership**—Unstructured documents are typically stored on personal disk space, making it difficult to harness this information for the benefit of other interested parties.
- **Duplication and version control**—E-mail attachments are often the primary method of sharing documents across functions, leading to uncontrolled duplication and alteration of resources.
- **Difficulty of quantifying business benefits**—Investments in managing unstructured information often produce soft benefits, which are not readily quantifiable.

...require the deployment of new corporate disciplines

The Need for Corporate Information Science

To prevent disorganized content from hampering staff productivity, best-practice companies have already taken steps to systematize the organization of information by transposing principles from traditional library and information sciences to the electronic realm. The CIO often serves as coordinator, with information-management professionals operating under his or her aegis.

Information Architecture Defined

“Information architecture involves the design of information organization, labeling, navigation and indexing systems to support both browsing and searching. It plays a central role in determining whether users can easily find the information they need. A well-designed information architecture minimizes the time that users of an intranet or Web site spend looking for information. An initial investment in a scalable architecture that can adapt easily as the site grows will prevent costly redesigns in the future.”

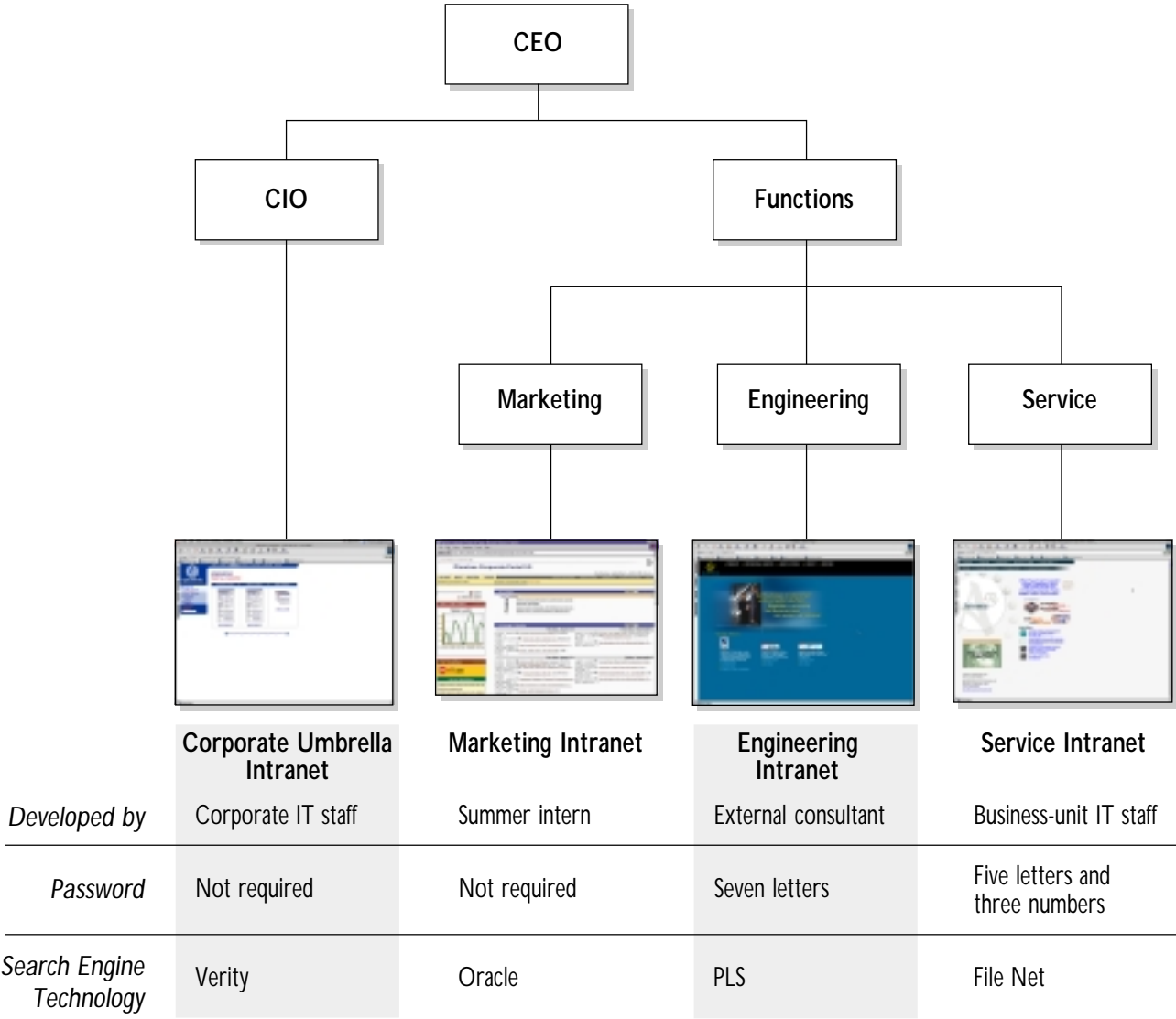
Argus Associates

Intranet Problem #1: Subscale Efforts Thwart Information Economies

Working Council research reveals that corporate intranets typically proliferate in a bottom-up fashion through the uncoordinated efforts of individual functions and/or business units. Impatient for development resources to become available after ERP implementation and Y2K remediation, individual units are managing their own intranets without enterprise-wide coordination, amplifying information redundancy and missing opportunities to create economies of scale during the development process.

Subscale Business-Unit-Led Intranets Perpetuate Information Siloing and Create Redundancy

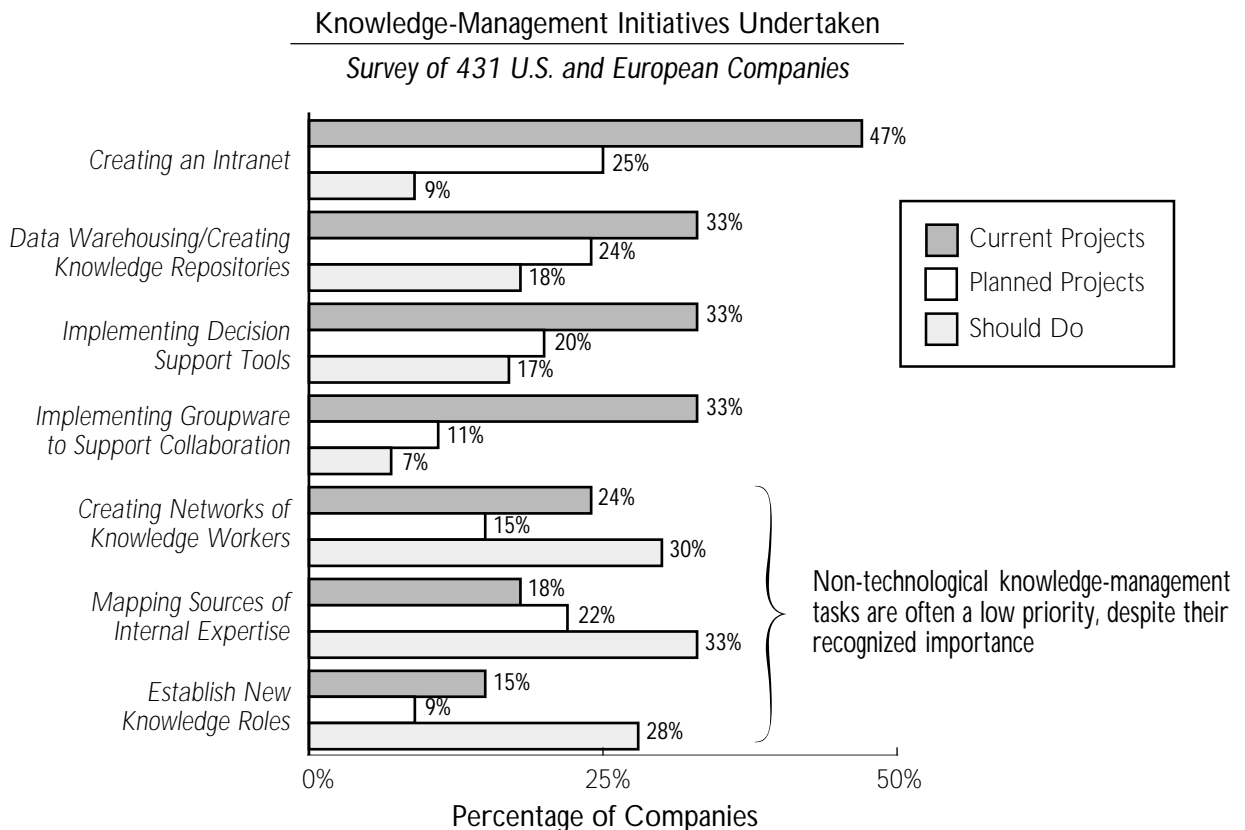
Duplication of Intranets at the Large Corporation
(Illustrative)



Intranet Problem #2: Underinvestment in Information Architecture

In addition, as is the case with many large-scale IT projects, the effectiveness of corporate knowledge-management intranets is hindered not by a lack of investment in technology or system implementation but by subscale investment in the policies and processes underlying the system. Admonition to the CIO: while responsibility for developing and maintaining intranet information architectures lies beyond the traditional purview of most CIOs, neglect of this critical function is the most common cause for the failure of corporate intranet implementations.

Knowledge-Management Investment Traditionally Focused on Enabling Technology Rather Than Underlying Information Architecture



Source: The Ernst & Young Center for Business Innovation, "Twenty Questions for the Knowledge Organization," (1997).

The Heart of the Problem

"Most managers faced with a new challenge approach it with tools they are already familiar with, and when the problem seems at first to be one of content management, those tools tend to be technological....If technology solves your problem, yours was not a knowledge-management problem."

Rudy Ruggles
Manager, Ernst & Young Center for Business Innovation

Source: Ruggles, Rudy, "The State of the Notion," *California Management Review* (22 March 1998).

Key Questions for the Corporate Center

As CIOs are increasingly becoming involved in corporate intranet implementations, they are making decisions that transcend the traditional expertise of most corporate IT departments and delve into the realm of information architecture and management. In order to assist the CIO with these critical decisions, and drawing from the lessons learned by corporate knowledge-management pioneers, the Working Council has identified best practices for addressing three critical questions faced by the corporate center in implementing and maintaining effective knowledge-management intranets.

Chapter One: Facilitating Information Accessibility



What methods are companies using to make their information resources accessible to their employees?

Profiled Practices:

- Controlled Metadata Vocabularies
- Parallel Taxonomies
- Thesaural Browsers
- Personalized Intranet Portals

Intranet Implementation Guide:

- Cross-Functional Implementation Teams
- Key Questions for Intranet Development

Chapter Two: Creating Knowledge-Sharing Incentives



What incentive structures help organizations ensure employee participation in information-sharing efforts?

Profiled Practices:

- Knowledge-Sharing Inclusive Performance Reviews
- Embedded Authorial Recognition

Chapter Three: Maintaining Content Quality and Relevance



What practices are companies using to ensure that information on intranets remains relevant and high quality?

Profiled Practices:

- Federal Knowledge Management
- Content-Validation Protocols
- Information-Expiration Mechanisms



Chapter One

Facilitating Information Accessibility

Despite considerable investment in technology and graphic interface design, many corporate intranet implementations continue to be plagued by information inaccessibility. These intranets typically suffer from poorly integrated information sources as well as inconsistent information naming and cataloging standards. Working Council research reveals that companies with successful knowledge-management intranets typically invest significant resources toward developing information architectures that provide easy and intuitive access to information. A common element of these information architectures is the deployment of multiple (and redundant) pathways to corporate information that support the various searching and browsing styles of different individuals.

Controlled Metadata Vocabularies

Page 12

Embedding intranet documents with metadata from a controlled vocabulary of terms allows users to more effectively target their searches and avoid false hits, increasing user productivity.

Parallel Taxonomies

Page 14

Developing dynamic parallel taxonomies that incorporate multiple-user browsing styles helps to ensure that different intranet users can find information quickly, easily and intuitively.

Thesaural Browsers

Page 16

Creating and maintaining a corporate thesaurus of related search terms allows users to browse through “adjacent” information and benefit from unexpected or unconventional associations.

Personalized Intranet Portals

Page 18

Consolidating corporate information resources into a customizable portal greatly improves user productivity and allows organizations to “push” relevant information to individual users.

Intranet Implementation Guide

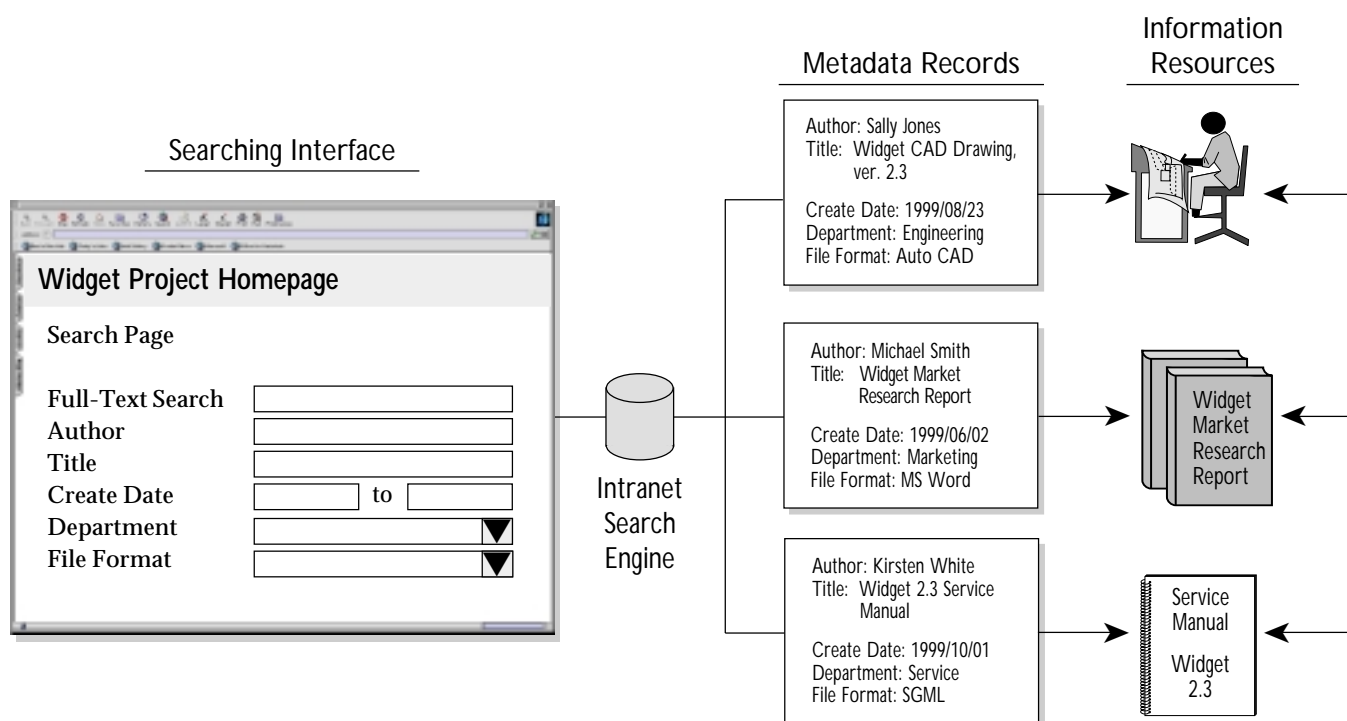
Page 20

Ensuring cross-functional collaboration by all intranet stakeholders is critical to the development of a good information architecture, which in turn is the key to successful intranet implementation.

Information Access: Searching

Users commonly access corporate information in two ways: searching and browsing. A common pitfall of traditional full-text searches on intranet-based search engines is that they often return large numbers of irrelevant results, forcing users to waste time sorting through unrelated information. This problem is addressed by embedding metadata within each document, capturing the document's author, creation date, topics and associated project name. Users can then more efficiently filter vast amounts of data by searching through both metadata and full-text fields.

Users access information through indexed searching...



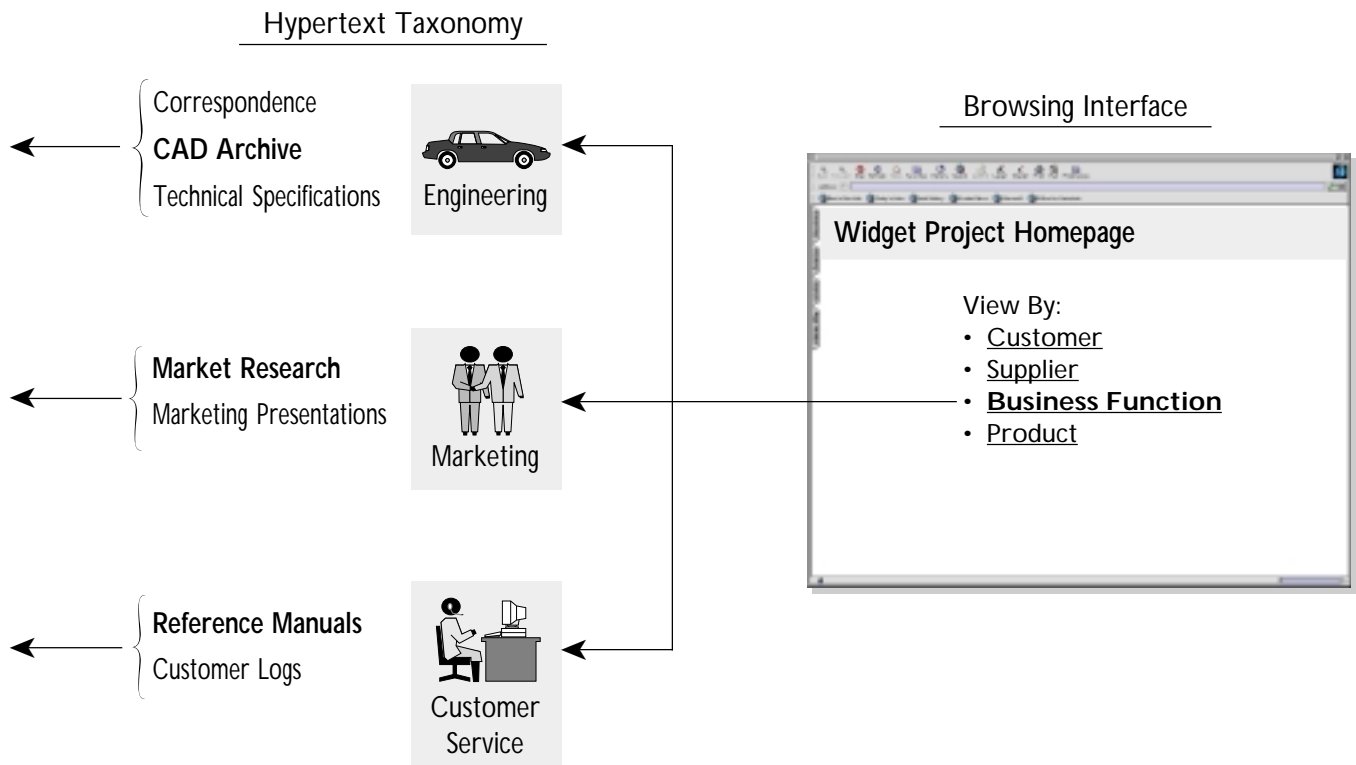
Types of Searching Activities

	Definition	Example
<i>Known-Item Searching</i>	A search for a document or object known by the searcher to reside somewhere on the intranet.	A developer searches for a copy of a project's data model.
<i>Exploratory Searching</i>	An iterative search for information, usually performed to gain an understanding of an unknown or unfamiliar domain of knowledge.	A researcher seeks information about the interaction between two drugs.
<i>Comprehensive Searching</i>	A search for all documents or information relating to a known problem, question or project.	A marketer wishes to identify all the competitors for a particular product.

Information Access: Browsing

In order to provide good browsing functionality, best-practice companies develop taxonomies to organize information into categories that reflect the way in which employees actually use or think about information—rather than the way in which the information is created.

...and by browsing through corporate-created taxonomies



Taxonomies Explained

A **taxonomy** is the orderly and systematic classification of information into a group with similar characteristics, as related to one (and only one) reference point.

A **zoological taxonomy** is the most common example, classifying the biological world from the reference point of *all* living things. For example, the domestic dog is classified as Animalia, Chordata, Vertebrata, Mammalia, Carnivora and Canis lupus familiaris.

Common business taxonomies include Products/Services, Competitors, Process Steps, Areas of Expertise, Customers, Suppliers, Supply Chain and Value Chain.

A **hypertext taxonomy** uses hyperlinks to enable users to surf through and across the branches of one or more classification schemes in order to obtain specific documents or pieces of information.



Practice #1: Controlled Metadata Vocabularies

Case Study: IBM's Sequent Computer Systems

- Headquartered in Oregon, Sequent is a manufacturer of Intel-based data center servers with annual revenues \$784.2 million (1998) and 2,600+ FTEs.
- Sequent Computer Systems was acquired by IBM Corporation in September 1999.
- To publish a document to Sequent's intranet, an employee must use a customized cataloging tool that performs two functions. First, it provides a familiar spreadsheet interface for entering metadata. Second, the tool publishes documents to appropriate directories within the intranet, adhering to company security, archival and access conventions.
- In 1999, over 91 percent of staff used the intranet more than once per week, an 11 percent increase over the previous year, and 50 percent use it more than once per day.

Practice Description

To minimize the number of false search hits that its employees must sift through to find desired information, the company creates an IT-enabled process wherein metadata is added to documents as they are published to the company intranet. To ensure that content creators use consistent metadata, terms must be selected from a central, corporate-controlled vocabulary.

Mechanics

- *Establishing a Controlled Vocabulary:* The company creates closely circumscribed sets of allowed values for each metadata item used to tag its intranet content.
- *Embedding Metadata:* Metadata fields in each document serve as containers for terms from the corporate-controlled vocabulary, allowing more detailed searches of aggregated content. For example, users can search for all documents with the keywords "IT strategic planning" created after 1999/06/01 in PowerPoint format with an author name of Smith or Khan.
- *Minimal Workflow Disruption:* The company implements a cataloging tool that permits content creators to associate metadata with documents without adding an additional step to the publication process. The tool limits the values for certain metadata fields to valid terms from the controlled vocabulary through the use of drop-down menus, and it automatically enters quotidian information such as date created, user name and the intranet URL where the document is located, minimizing additional employee effort.

Assessment

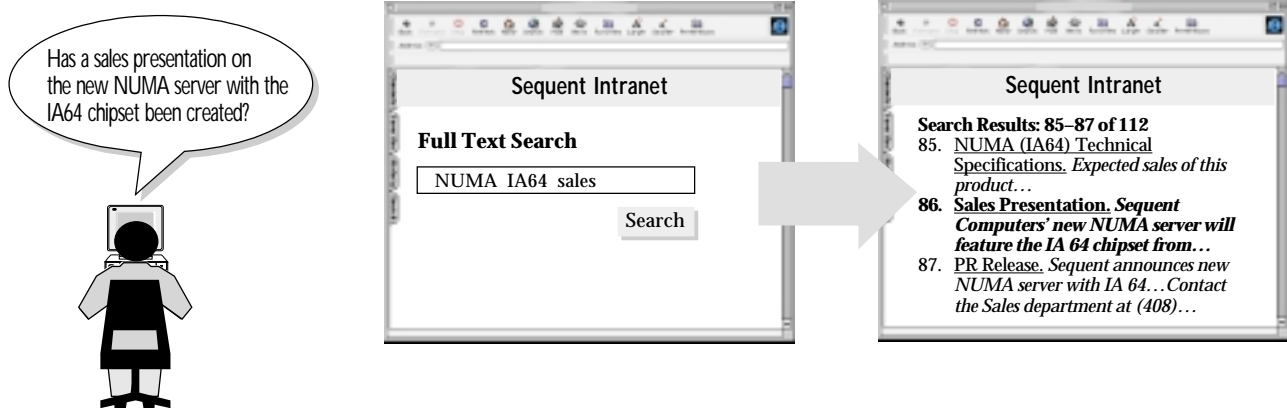
Reducing Employee Effort: By facilitating the tagging process and incorporating it into content creators' regular workflow companies can overcome employee resistance to the perceived extra task of entering metadata, while at the same time minimizing false search results for intranet users.

A Note on Metadata and Controlled Vocabularies

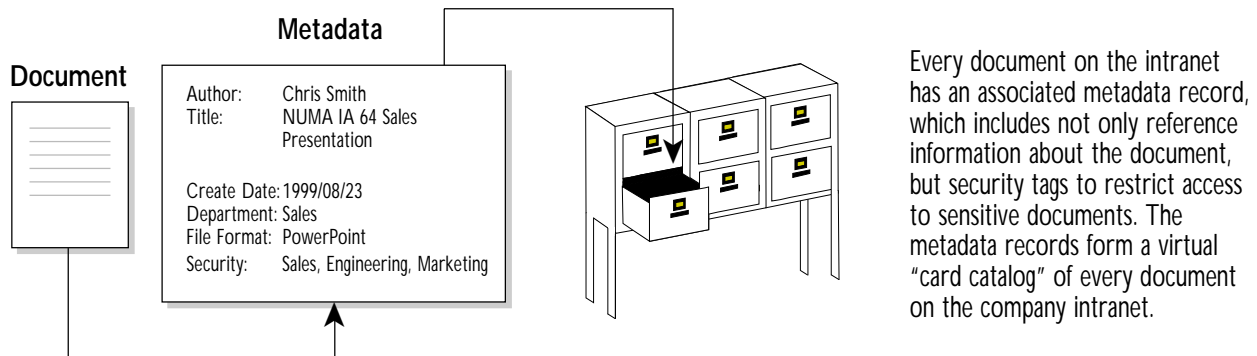
- Approximately 30 percent of corporations systematically utilize metadata to classify information, while only one to three percent of companies populate those metadata tags using controlled vocabularies.
- A controlled vocabulary can be as simple as a list of valid file formats for a particular document or a valid list of company department names for expense reporting purposes.
- The absence of controlled vocabularies on the World Wide Web in a large part explains the frustration users experience when viewing huge lists of search results returned by the major Internet search engines.

Creating a Corporate Knowledge Index

- ① *To help staff avoid the task of sorting through false hits...*



- ② *...Sequent Computers implements metadata for each document, creating a virtual "card catalog"...*



- ③ *...and enforcing the use of a controlled metadata vocabulary with a customized cataloging tool, permitting users to restrict searches to document attributes*

Drop-down menus enforce use of controlled terms, helping Sequent to avoid two key linguistic problems in searching: content creators tagging and accessing documents with variants of a term and content creators tagging documents with terms that have multiple meanings.

Sequent Intranet

Sequent Cataloging Tool

Product: NUMA, IA64

Title: Presentation for...

Department: Sales

Subject: NUMA

File Type: Design Document, Instruction Manual, Promotional Brochure, **Sales Presentation**, Technical Specification

Content creators must choose one term from the controlled vocabulary. For example, the term "Sales Presentation" is used to cover the variants "Customer Demo," "Customer Presentation" and "Sales Demo."

Practice #2: Parallel Taxonomies



Case Study: Bay Networks

- \$2.1 billion (1997) U.S.-based network hardware firm acquired by Nortel Networks in August 1998.
- Bay Networks designs its corporate intranet so users can access electronic information through many interlinked taxonomies, creating a “forest” of information resources that contains thousands of cross-referencing hyperlinks.
- After spending two years and \$3 million on development and usability testing Bay Networks expects to see \$10 million in productivity gains and a 10 percent cycle-time reduction for new product development as a result of its new information architecture.

Practice Description

In order to accommodate the varied searching habits of different user constituencies such as engineers, sales people and logistics professionals, the company develops a system of parallel taxonomies, whereby electronic corporate records are organized to provide multiple, independent ways to access a particular resource.

Mechanics

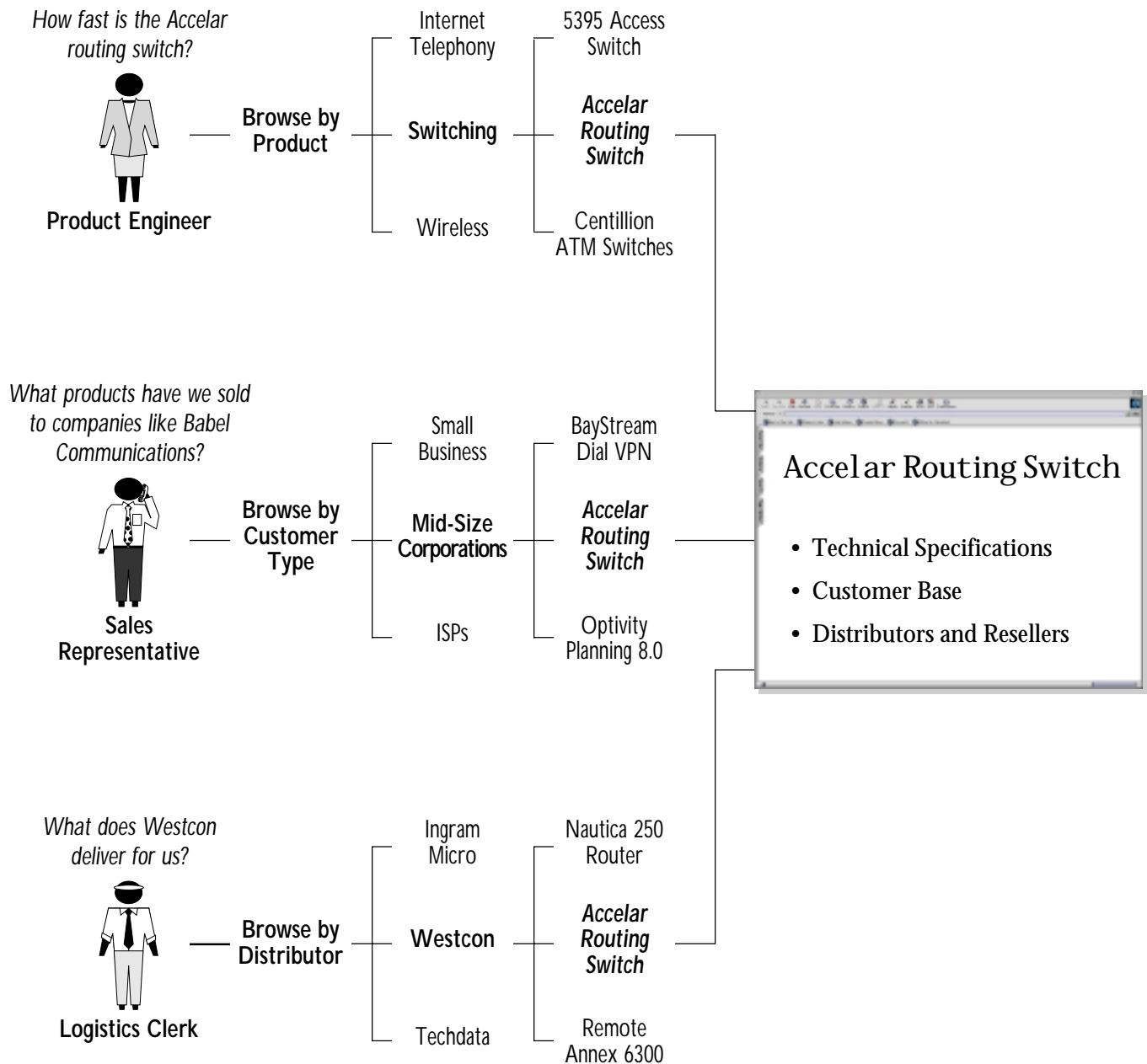
- *Taxonomy Creation and Maintenance:* The design team creates and maintains parallel taxonomies that organize information according to common content areas such as Products, Services, Competitors or Customers.
- *Cross-Referencing Content:* Links are created to allow cross-referencing between different taxonomies. On average, every document is linked to four other documents, although some documents contain up to 100 such links.
- *Usability Testing:* Usability engineers perform tests to ensure that employees can expeditiously locate specific documents by browsing through the various taxonomies.
- *Constant Evolution:* Taxonomies are modified according to usability engineers' findings and are updated periodically to reflect the way in which users access information.

Assessment

Intuitive Information Access: Categorizing information along multiple parallel taxonomies allows companies to accommodate the varied browsing styles of their internal communities, a critical factor since users tend to upload information by department and download information by product. In addition, the ability to view information within various taxonomies recreates the sense of wandering through bookshelves, where similar subjects are adjacent to one another, facilitating the discovery of related resources by browsers.

Supporting Multiple Information Pathways

Bay Networks' Parallel Taxonomies Provide Redundant Hypertext Paths That Incorporate Different User Perspectives



Practice #3: Thesaural Browsers



Case Study: Teltech Resource Network Corporation

- Research and knowledge-management services company based in Minneapolis.
- Using a patented Integrated Source Map, a proprietary thesaural browser, Teltech provides its analysts with a tool for navigating 1,600 topic-specific databases, including technical and industry expert biographies, research briefs and patent and trademark documents.
- Key features of the thesaurus page include transparent searching by synonyms (including foreign language equivalents) and analyst-assisted navigation to content via broader, narrower and related terms.

Practice Description

To provide analysts with a way to identify all relevant corporate resources on any particular subject, the company creates a hybrid search/browse tool that integrates all of the knowledge bases contained within its information systems. Using this tool, company analysts are able to perform highly efficient, iterative known-item and exploratory searches, creating comprehensive lists of all relevant sources of information and zeroing in on the most promising avenues of inquiry.

Mechanics

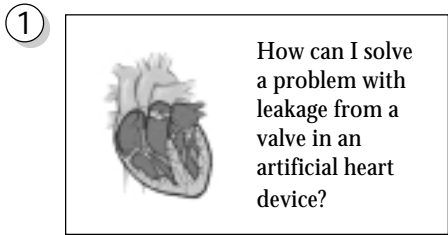
- *Categorizing the Knowledge Base:* In order to map the totality of its corporate information resources, the company creates multiple taxonomies, then creates a “thesaurus” of related terms that is in turn hyperlinked to every entry in the taxonomy.
- *Keeping the Taxonomy Current:* Experts review the taxonomy to ensure continued relevance with changes to language, technology and other dynamic phenomena. Major structural changes to the taxonomy occur no more than once every six months, while additions occur on an ongoing basis.
- *Maintaining the Thesaurus:* Thesaural links are reviewed by subject matter experts in order to ensure that extant associations are useful and accurate and corrections are made as needed.

Assessment

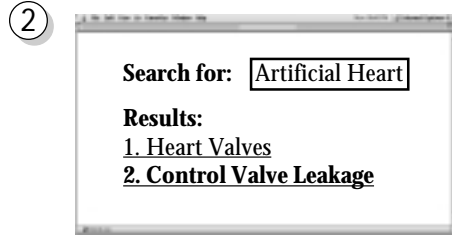
Unveiling Knowledge Adjacency: Thesaural links, which create a kind of “virtual bookshelf,” map relationships between seemingly disparate content. As a result, intranet users are able to identify associations between terms and capture resources that they would normally miss using standard, full-text searches. Thesaural browsers are particularly useful in situations where contributors and users approach topics with different terminologies or from different perspectives.

Harnessing the Power of Associations

Thesaural Browsing Allows Teltech's Knowledge Analysts to Identify Unconventional Solutions to Client Problems

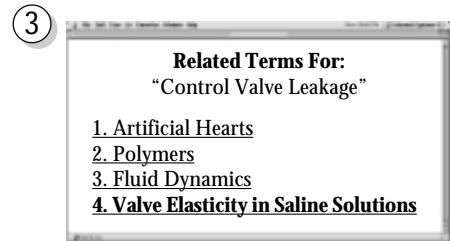
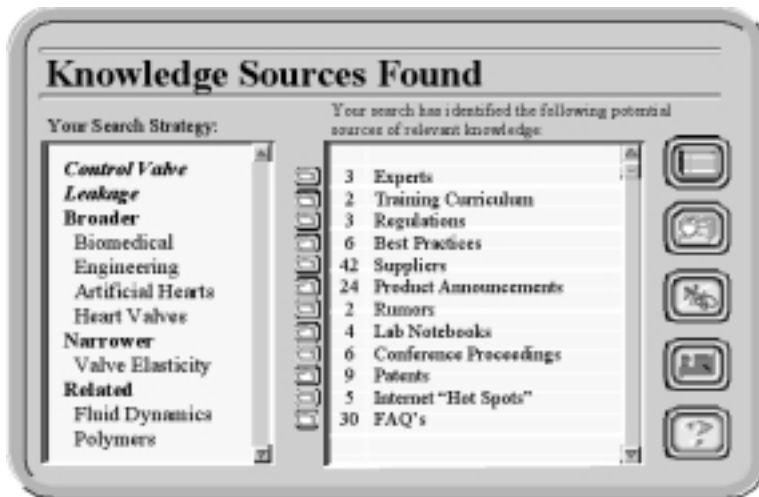


Biomedical question spurs client to call Teltech analyst

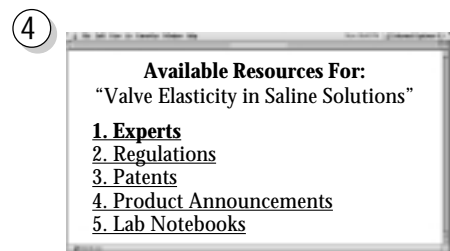


Exploratory search on term "artificial heart" leads to entry on "control valve leakage" in Teltech's taxonomy

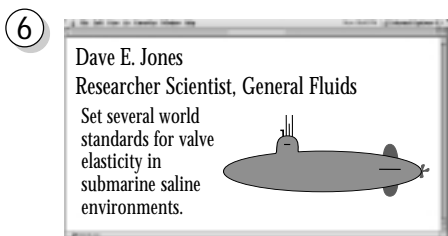
Teltech Integrated Source Map (Illustrative)



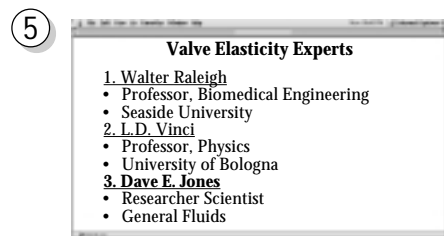
Related term from thesaurus leads to possible cause of client problem: valve elasticity in blood saline environment



Source map displays comprehensive list of available information resources on valve elasticity



Thesaurus returns unexpected match with expert from seemingly unrelated field—valve elasticity in submarine saline environment; expert satisfies client's needs



Hyperlink click displays list of experts on valve elasticity

Practice #4: Personalized Intranet Portals



Case Study: Cisco Systems, Inc.

- U.S.-based computer networking products manufacturer with \$12 billion in annual revenues (1999) and 21,000 FTEs.
- Faced with an information architecture that required its employees to search multiple systems, Web sites and physical locations for the information they needed to perform their jobs on a daily basis, Cisco implemented a full-service corporate intranet portal called Cisco Employee Connection, which allows employees to personalize their intranet view and access enterprise data at their desktops.
- Cisco Employee Connection has produced \$16 million in annual productivity gains, and Cisco's employees are nearly twice as productive as those of its networking industry competitors.

Practice Description

To increase staff productivity and minimize time devoted to searching the corporate network, the company personalizes its users' views of and access to intranet-based resources, giving them selective access to the information that is most relevant to their daily work.

Mechanics

- *Information Consolidation:* The company integrates internal and external information sources and consolidates the information on the company intranet, which acts as a "gateway" for all information seekers. Information sources can include E-mail, internal documents, calendars and dynamic, third-party content such as stock quotes or news feeds.
- *Personalized Delivery:* By customizing their own individual interfaces with the intranet, users can access necessary information resources and script tasks that they frequently perform with those resources.
- *Dynamic, Targeted Content:* New information, such as a design modification to a document or breaking market news is "pushed" to affected users through the intranet based on their customization parameters, alerting them to information they might have overlooked.
- *Role-Specific Access:* Security tags limit employee access to documents according to a corporate directory that requires a single username and password for access from any point on the World Wide Web.

Assessment

Efficient Information Delivery: Establishing a customizable intranet portal provides employees with desktop access to role-specific information, obviating the need for staff to spend valuable time searching in multiple locations for required resources. In addition, portals with "push" capabilities allow organizations to distribute information that might otherwise go unnoticed.

The Intersection of “Pull” and “Push” Delivery

Cisco Employee Connection Intranet Portal

The screenshot shows the Cisco Employee Connection Intranet Portal. The interface includes a navigation bar with links like 'HOME', 'ABOUT', 'WHAT'S NEW', 'INDEX', 'SEARCH', 'FEED', 'FAQ', and 'HELP'. The main content area is divided into several sections: 'Office of the President', 'Lines of Business' (Enterprise, Service Provider, Small/Medium Bus, Consumer), 'Business Functions', 'News & Stocks', 'Support & Training', 'Site Index', 'Corporate', 'Tools & Forms', 'Break Room', and 'Search'. Callouts provide additional context:

- Integration of external content such as news feeds and expert articles with internal resources provides comprehensive information access through a single user interface** (pointing to the 'News & Stocks' section).
- Individual employees can personalize their intranet views using Yahoo! technology** (pointing to the 'Personalization' link in the top right).
- Enterprise data is available to decision makers at their desktops, increasing Cisco's ability to react to market changes** (pointing to the 'Enterprise Data' link in the top right).
- Community and role-specific access allows employees to easily find relevant sources of information** (pointing to the 'Lines of Business' section).
- Provision of templates and instructions for frequently performed tasks minimizes employee workflow disruption** (pointing to the 'Tools & Forms' section).
- New or important content is "pushed" to affected users in real time based on their customization parameters** (pointing to the 'Feeds' link in the top right).

Intranet Implementation Guide



Cross-Functional Implementation Teams

Case Study: Babel Communications*

- Global telecommunications firm with annual revenues of more than \$10 billion and 50,000+ FTEs.
- Call center operators must locate and use information contained in 6000+ documents detailing rates, calling plans and customers.
- Training costs for each operator exceed \$10,000, and operators often tack hard-to-find documents to their cubicle walls despite the dynamic nature of the content.
- Company attempts to improve access to real-time information utilizing a corporate intranet, but intranet development organized along existing inter-organizational boundaries results in the proliferation of subscale, inconsistent implementations.
- Users are required to use multiple logins and passwords in order to access content on various business-unit intranets, increasing the time it takes employees to locate information and reducing staff productivity.
- Company retrenches and undertakes second-generation intranet implementation using cross-functional teams, utilizing diverse organizational perspectives to identify logical ways in which to structure access to information.
- Next-generation intranet produces reduced training costs, facilitates real-time access to required information and decreases the turnover rate of previously frustrated operators from 25 to 15 percent.

Process Description

In the pursuit of greater economies of scale and intellect, the company assembles several cross-functional teams to develop the information architecture for a companywide intranet. The teams bring together representatives from various user groups (functional and business-unit staff), information-science specialists (librarians) and Web developers.

Mechanics

- *Gathering Top Talent:* The appointment of business-unit high performers ensures sanctioned stakeholder representation.
- *Leveraging Available Expertise:* The Information Design and Web Development groups leverage an amalgam of external consultants and internal talent. External resources include an information architect and a user-interface designer. Internal staff include a corporate librarian with a specialty in electronic information science.

Assessment

Breaking Down Internal Barriers: In their initial incarnations intranets commonly mirror the implementing company's organizational hierarchy, and as such taxonomies are created from a top-down perspective, failing to accurately represent the way end users view information. Cross-functional teams allow for "bottom-up" implementations, incorporating end-user delivery preferences for information, fostering business-unit consensus for intranet initiatives and effectively leveraging intranet expertise, which has traditionally been siloed in disparate business units.

* Pseudonym.

Leveraging the Expertise of Diverse Communities

Cross-Functional Intranet Implementation Team

(Illustrative)

① Internal Stakeholder Representatives



Stakeholder Team:

- *Background:* High-potential employees selected from each business unit
- *Key Activities:* Intranet business model development
- *Project Status:* Part time with short, intense meeting periods during project scoping phase

Engagement Manager:

- *Background:* Typically business process design
- *Key Activities:* Business process coordination, intranet business model development
- *Project Status:* Full time

② Information Design Team



Information Architect:

- *Background:* Typically an external consultant with expertise in library and information science
- *Key Activities:* Information architecture design, content management policy creation
- *Project Status:* Full time during project implementation, part time for periodic maintenance

User Interface Designer:

- *Background:* External consultant with expertise in human-computer interaction or usability engineering
- *Key Activities:* User interface design, usability testing
- *Project Status:* Full time during project implementation, part time for periodic maintenance

IT Account Manager:

- *Background:* IT generalist, aware of capabilities and constraints of the IT function
 - *Key Activities:* Coordinate intranet application development with IT
 - *Project Status:* Full time

④ Content Management Team



Project Manager:

- *Background:* 10–15 years internal management experience
- *Key Activities:* Coordination of business-unit intranet activities
- *Project Status:* Full time after implementation

Editor/Content Manager:

- *Background:* 5–7 years editorial experience, master's degree in library science preferred
- *Key Activities:* Taxonomy maintenance, content management
- *Project Status:* Full time after implementation

IT Liaison:

- *Background:* 5–7 years internal IT experience (Web development experience preferred), willing to learn knowledge management
- *Key Activities:* Coordination of IT development efforts, Web development
- *Project Status:* Full time after implementation

③ Web Development Team



Database Designer:

- *Background:* Typically a DBA with experience building database-backed Web sites
- *Key Activities:* Data modeling, database development
- *Project Status:* Full time during implementation phase only

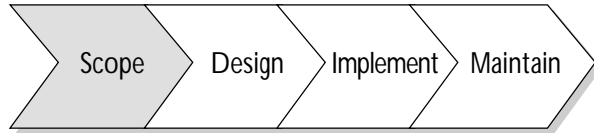
Web Developers:

- *Background:* Internal IT staff, past Web application development and intranet design work desirable
- *Key Activities:* Coding and scripting for intranet site
- *Project Status:* Full time during implementation phase only

Intranet Implementation Guide

Key Questions for Intranet Development

① Scoping Phase



Key Deliverables: • Internet strategy document with business-case justification and project timeline

Participants: • Stakeholder team
• Information design team

Duration: 1–2 Months

Key Questions

Organization:

- ✓ What is the business case for the intranet implementation?
- ✓ How will the intranet help the organization achieve its business goals?

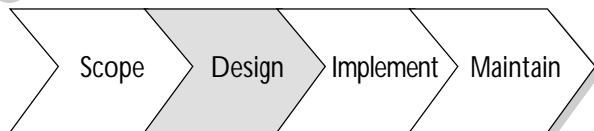
Users:

- ✓ Who are the intended users of the intranet?
- ✓ What level of access should they have to the corporation's information?
- ✓ How will the intranet help them perform their jobs?
- ✓ Exactly how do users currently access and utilize corporate information on a daily basis?

Content:

- ✓ What content and applications are currently being provided to users?
- ✓ What will the intranet's content scope, volume and level of structure be?
- ✓ What metadata will the intranet use?
- ✓ Who will create and maintain metadata?
- ✓ What infrastructure is needed to support high-end content management?

② Design Phase



Key Deliverables: • Site blueprint with page-by-page mockups of user interface and labeling systems

• Design standards document

• Data model for back-end database

• Search-engine design specifications

Participants: • Information design team

Duration: 1–3 months

Key Questions

Labeling:

- ✓ Will the labeling conventions make intuitive sense to intranet users?

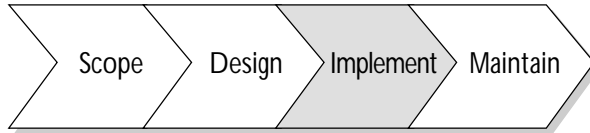
Searching:

- ✓ Will there be a single master search engine, or will certain areas of specialty content have their own dedicated search engines?
- ✓ What fields will be consistent across all search forms?

"Look and Feel":

- ✓ What will the site's navigation structure and logic be?
- ✓ What visual metaphors will be used across the site, and with what degree of consistency?

③ Implementation Phase



Key Deliverables: • Operational intranet

- Content management policy document

Participants: • Web development team
• Information design team

Duration: 1–6 months

Key Questions

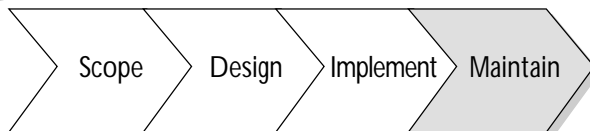
Usability Testing:

- ✓ Can users easily locate specific documents using the new system?
- ✓ Is there a measurable improvement in information accessibility in comparison to the period prior to the intranet implementation?

Content Management:

- ✓ How will the business units provide incentives for employees to contribute content?
- ✓ What are the decision rules for deleting, retiring or archiving content from the intranet?
- ✓ Who will perform these tasks?

④ Maintenance Phase



Key Deliverables: • Central standards for information architecture and intranet publishing

- Standards for business-unit intranet development

- Intranet content aging and usage reports

- Groomed taxonomies and controlled vocabularies

Participants: • Content management team
• Stakeholder team

Duration: Ongoing

Key Questions

Usage Review:

- ✓ How are employees actually accessing, navigating and using intranet content? How often?
- ✓ How is user input incorporated into the site's taxonomies?

"Evolution" of Terms:

- ✓ How are the controlled vocabularies changing over time?
- ✓ What new terms (new products, new technologies, new markets) need to be incorporated into the controlled vocabularies?

"Weeding Out" Unused Information:

- ✓ What documents are not being accessed? Why?
- ✓ Should these documents be archived or deleted?
- ✓ Who should make this decision?



Chapter Two

Creating Knowledge-Sharing Incentives

After developing intuitive information architectures that support multiple pathways to information, knowledge-sharing pioneers typically discover that to populate their intranets they must conquer the natural hesitancy of individuals to codify and share knowledge. Reasons for employee reluctance to share information range from a professed “lack of time” and ignorance of others’ information needs, to more deliberate attempts at withholding information for political reasons. Many knowledge-sharing implementations have been defeated by this classic form of internal market failure: while the costs of contributing knowledge are directly borne by individual employees, the rewards of sharing knowledge are distributed throughout the organization. In order to redress this imbalance, knowledge-sharing exemplars recognize and reward employees’ knowledge-sharing behaviors formally and proactively.

Knowledge-Sharing Inclusive Performance Reviews

Page 26

Progressive companies formally track knowledge-sharing activities and incorporate them into their staff performance evaluation processes, explicitly linking knowledge-sharing behavior with financial rewards and career advancement.

Embedded Authorial Recognition

Page 28

Knowledge-management pioneers have discovered that staff are more likely to contribute tacit knowledge when given formal authorial recognition, which enhances their visibility and reputation within the firm.

Practice #5: Knowledge-Sharing Inclusive Performance Reviews



Case Study: Arthur Andersen's Business Consulting Division

- U.S.-based, 10,000+ consultant unit of \$7.3 billion (1999) professional services firm.
- Business Consulting Division evaluates knowledge-sharing activities as one component of its consultants' semiannual performance review, ensuring that consultants' knowledge-sharing performance has implications for merit pay and career advancement.
- Consultants are evaluated using both quantitative measures collated by the central knowledge-management group and qualitative feedback provided by direct managers.
- Usage of KnowledgeSpace, Arthur Andersen's proprietary knowledge-management intranet, has exceeded 90 percent firmwide, and the usage rate within the Business Consulting Division is 95 percent. In addition, call volume to the existing global, 24-hour service hotline has dropped by 50 percent since the implementation of KnowledgeSpace.
- Noteworthy contributions to KnowledgeSpace are highlighted conspicuously in the Business Consulting Division's monthly newsletter.

Practice Description

Operating under an incentive structure that focuses on direct work output rather than time spent codifying knowledge gained from on-the-job experience, employees are not motivated to contribute resources to the company's intranet. To remedy this situation the company develops knowledge-sharing metrics and incorporates them into employees' performance reviews.

Mechanics

- *Developing Tracking Tools:* Knowledge-management organization develops tools to track knowledge-sharing metrics and detail individual employees' contributions to intranet usage and content.
- *Formal Reporting:* Knowledge-sharing performance reports are distributed by the knowledge-management organization to unit managers for use in employee performance evaluation. To provide context and facilitate comparisons, reports contain aggregate data for the entire unit as well as granular information on individual employees.
- *Weighting Criteria for Evaluation:* Knowledge-sharing elements of employees' performance evaluations, including quantitative and qualitative aspects, are weighted according to the importance of collaborative work and knowledge codification to specific jobs and business units.

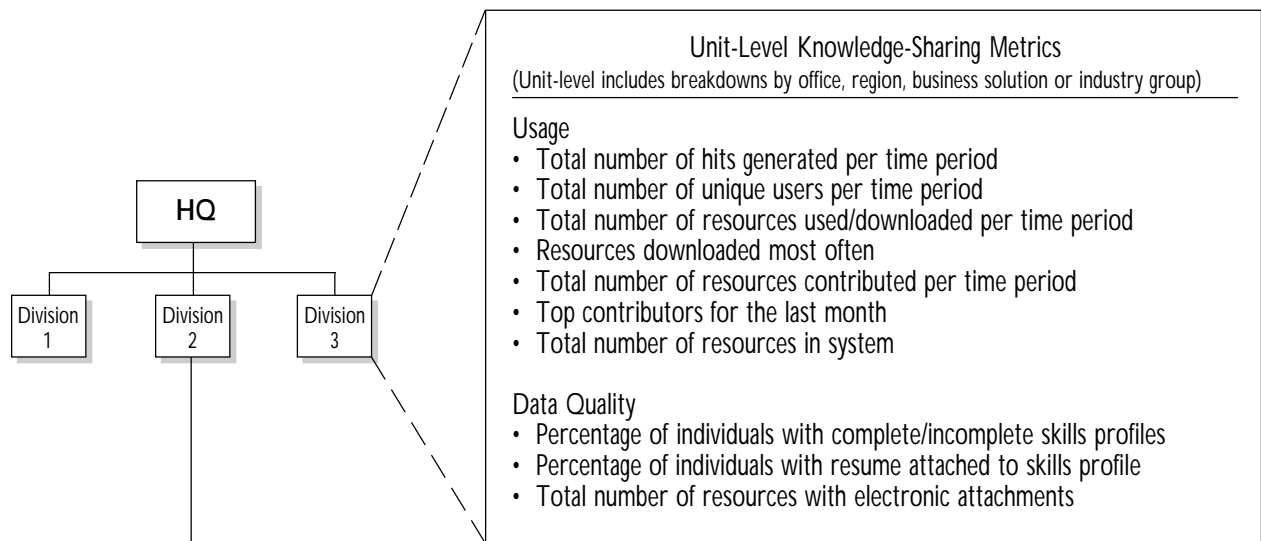
Assessment

Increasing Employee Stake: Knowledge-sharing inclusive performance reviews encourage employee participation in knowledge-management efforts by providing direct financial incentives for knowledge-sharing behavior. Quantifiable metrics tracked by a dedicated unit, augmented by qualitative reviews of an employee's "attitudes toward knowledge sharing," form a solid initial framework for evaluating employee contribution to the firm's knowledge base.

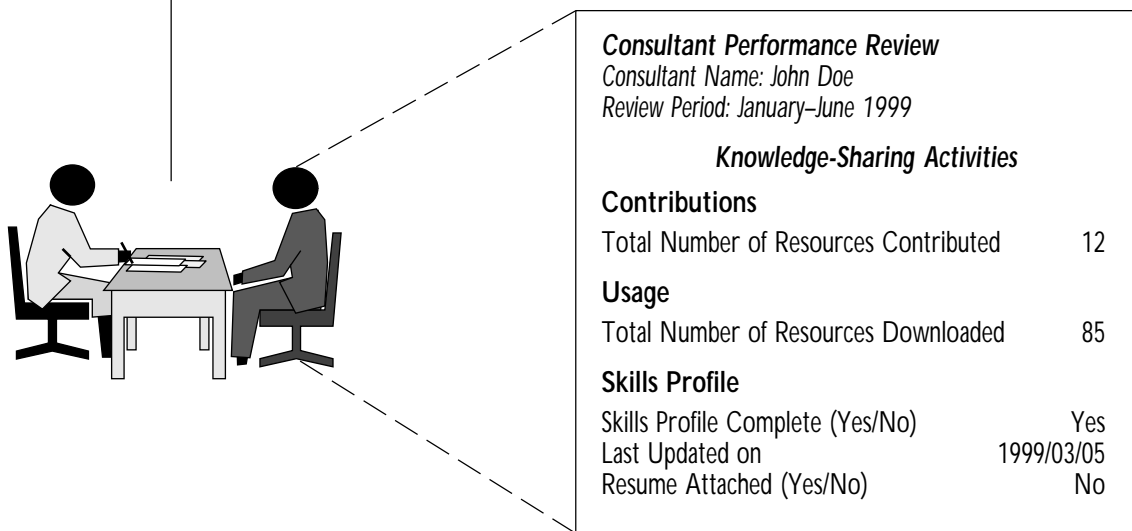
Rewarding Knowledge-Sharing Behavior

***By Incorporating Knowledge-Sharing Requirements into Career Reviews,
Arthur Andersen Provides Financial Incentives for Contributing
to the Corporate Knowledge Base***

Divisional metrics ensure managerial commitment...



...while individual metrics are used in career reviews



Practice #6: Embedded Authorial Recognition



Case Study: Xerox's Eureka Project

- U.S.-based copier manufacturer and document management company with annual revenues of \$19.5 billion (1998) and 92,000+ FTEs.
- Repair and maintenance tips submitted to the company's browser-accessible Eureka database by the company's 20,000+ customer service professionals in the field prominently display the author's name when other technicians access the tip.
- Xerox credits authorial recognition—and its associated prestige value—with dramatically increasing technicians' contributions to the corporate knowledge-sharing intranet.
- About 3,800 employees, or 20 percent of the Xerox's technicians worldwide, generate the majority of the best practices submitted to Eureka, which contains over 30,000 logged tips.
- Xerox has achieved savings of \$10 million to date.

Practice Description

After cash incentives fail to persuade company technicians to submit best practices to the corporate intranet, the company begins to embed the authoring employee's name in best-practice descriptions. When users access a document, the author's name is prominently displayed, raising awareness of the author's status as an expert and creating a sense of prestige around document submission.

Mechanics

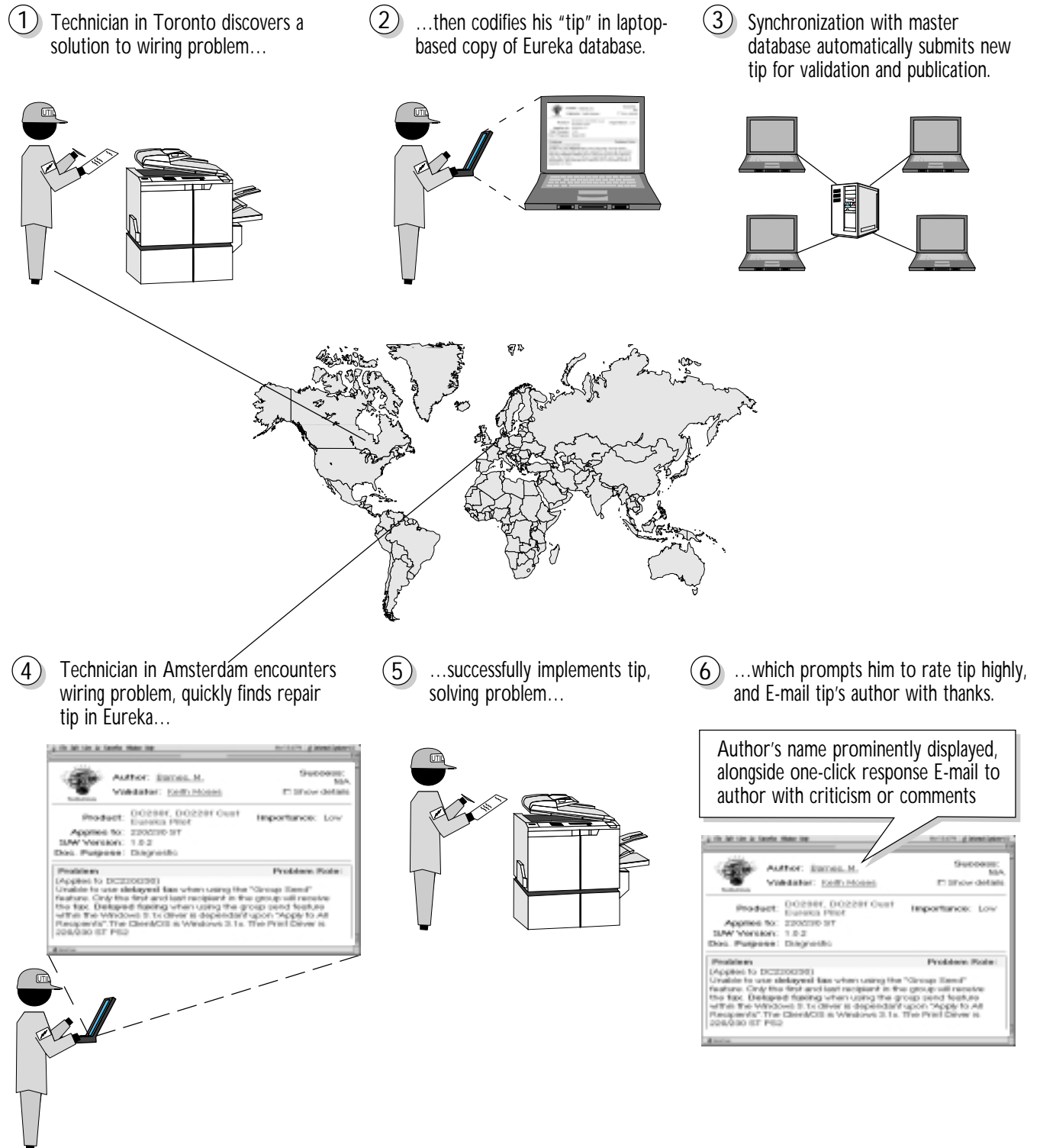
- *Automated Cataloging:* After discovering a potential best practice, the authoring technician submits the practice to a local copy of a browser-accessible corporate database. An automated cataloging mechanism embeds the author's name prominently into each practice entered into the database.
- *Frequent Synchronization:* At least once weekly, all technicians synchronize their local databases—contained on corporate-issue laptop computers—with the master database.
- *Peer Evaluation:* Colleagues can respond to the practice with positive or negative feedback, providing comments and acting as a de facto rating mechanism that allows the company to gauge the true value of the practice.
- *Communities of Practice:* Response capabilities also help to develop communities of practice around product lines or business functions and across geographies, as employees comment on each other's submitted practices and share further insights.
- *Insights Incorporated into Future Product Development:* Engineers use the database to identify the most commonly recurring service problems and develop solutions that are incorporated into future products.

Assessment

Giving Credit Where Credit Is Due: Authorial recognition helps to increase individual participation in corporate knowledge-management initiatives. This practice is particularly effective for communities that are geographically distributed and would otherwise not have occasion to interact directly or contribute collectively toward the advancement of the company's goals.

Acknowledging Authorship

By Recognizing Each Contributor by Name, Xerox Creates Incentives for Best Practice Sharing Across Globally Dispersed Communities





Chapter Three

Maintaining Content Quality and Relevance

A classic pitfall of corporate intranet implementations is underinvestment in content management. Poorly maintained intranets accumulate content that is outdated or inaccurate, overwhelming users with irrelevant information or false hits and potentially undermining the efficacy of large investments in knowledge-management technology. To maintain the quality and relevance of their intranet content, knowledge-sharing exemplars invest significant resources in content-management procedures.

Federal Knowledge Management

Page 33

Companies in knowledge-intensive industries are creating knowledge-management teams, dedicated solely to identifying and codifying best practices and maintaining intranet content. These teams are distributed throughout the organization to ensure that they remain close to local business conditions and sources of expertise, but they follow centrally determined content-management standards.

Content-Validation Protocols

Page 36

The use of formal content-validation protocols enables companies to verify the quality of intranet submissions within short time frames before publication, ensuring that information is correct and available quickly to a global user base.

Information-Expiration Mechanisms

Page 38

Age-based reporting mechanisms allow companies to proactively identify intranet content that may be out of date and route it to the author or local content manager for validation, updating, “retirement” to company archives or outright disposal.

Practice #7: Federal Knowledge Management



Case Study: Arthur Andersen

- U.S.-based professional services firm with annual revenues of \$7.3 billion (1999) and 72,000 FTEs worldwide.
- In 1996 Arthur Andersen began work on KnowledgeSpace, an enterprise-wide on-line database of best demonstrated practices harvested from engagements across its various service lines.
- To support and maintain the database, Arthur Andersen creates a federal management structure, allowing the company to harvest best practices in both a top-down and bottom-up fashion. A central best-practices team researches, identifies, codifies and disseminates practices that it perceives are “next practices” for inclusion in KnowledgeSpace. Additionally, line consultants can nominate case examples of best practices seen in the field for inclusion.
- Central KnowledgeSpace group also sets content management and information technology standards for divisional and business-unit knowledge-sharing intranets.
- Since 1996, KnowledgeSpace has grown to include both an internal portal for use by consultants around the world and an external portal site that generates revenue for the company through its more than 3,600 subscribers worldwide.

Practice Description

In order to balance the need for consistency across divisions and business units with the benefits of locally owned and managed content, the company develops a federal knowledge-management structure, whereby the center focuses on standard-setting and the business units concentrate on content management.

Mechanics

- *Central Standard-Setting Council:* The corporate center establishes a stakeholder council managed by the CIO and the corporate head of knowledge management with representation from the business units; the council sets corporate standards for information architecture, technology infrastructure and content-management practices.
- *Divisional Intranet Development and Maintenance Teams:* Each division funds its own intranet team, responsible for actually developing and maintaining divisional intranets, administering knowledge-sharing incentives, overseeing content management and ensuring content quality.
- *Business-Unit Knowledge-Manager Network:* Business units fund a distributed network of dedicated knowledge managers to support the information needs of employees in particular specialties or regions and create original intranet content.

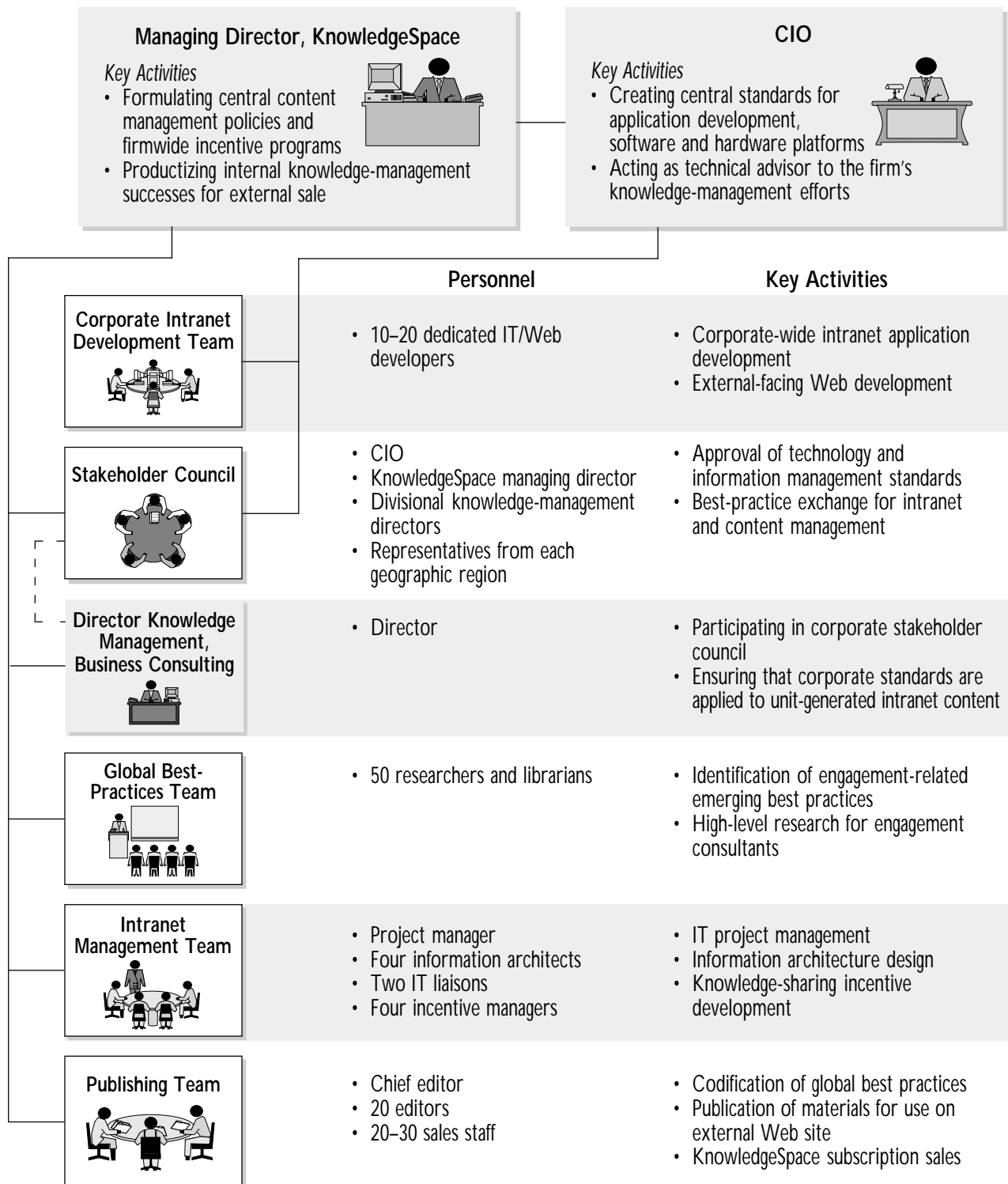
Assessment

Global Economies of Scale and Intellect: A federal knowledge-management structure offers great flexibility, enabling the company to realize the efficiencies of global knowledge management and technology standards while harnessing the expertise of its network of distributed experts. Additionally, the company can codify and distribute best practices in knowledge management across its federalized organization.

Central Standard Setting and Coordination

The corporate center sets content standards, coordinates divisional intranet activities and cross-pollinates best practices...

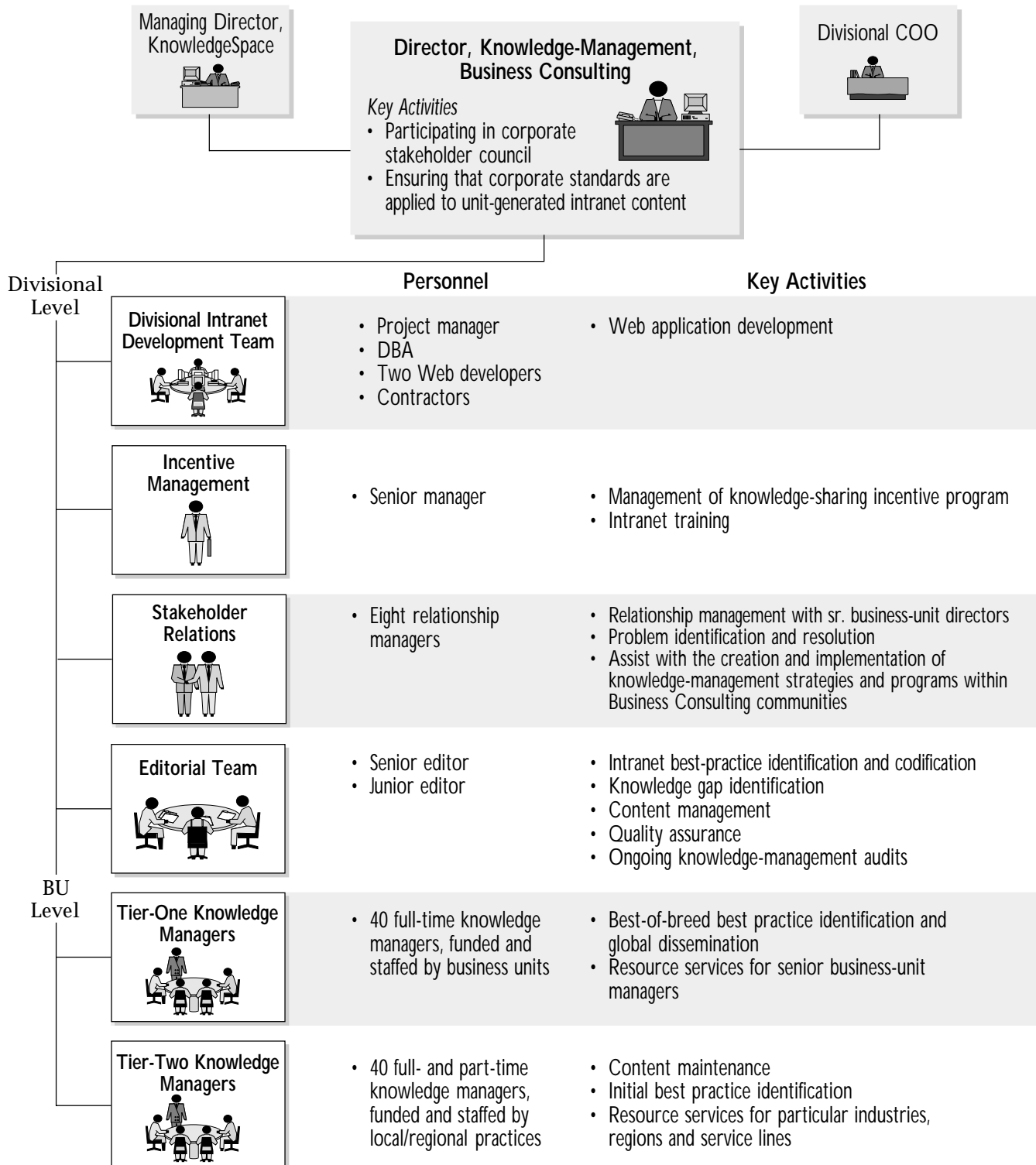
Arthur Andersen's Corporate-Level Knowledge-Management Organization



Local Content Creation and Management

...enabling divisions to focus efforts on best-practice identification, content management and intranet customization

Business Consulting Division's Knowledge-Management Organization



Source: Arthur Andersen.

Practice #8: Content-Validation Protocols



Case Study: Xerox

- U.S.-based copier manufacturer and document management company with annual revenues of \$19.5 billion and 92,000+ FTEs, including over 20,000 customer service professionals.
- To allow its mobile service technicians to tap into organizational knowledge, Xerox creates Eureka, a browser-accessible best-practices database that resides on technician's corporate-issued laptops.
- Through synchronization with a master database in Dallas, technicians upload their proposed tips and can download newly validated tips from all over the world.
- Eureka currently contains over 30,000 validated tips, and Xerox targets validation of 80 percent of all submitted tips within 21 days of submission.

Practice Description

To ensure that repair practices submitted by service technicians are well crafted and cannot damage equipment, the company establishes a tiered network of content validators that includes both “tool-bag-carrying” technicians and field service engineers.

Mechanics

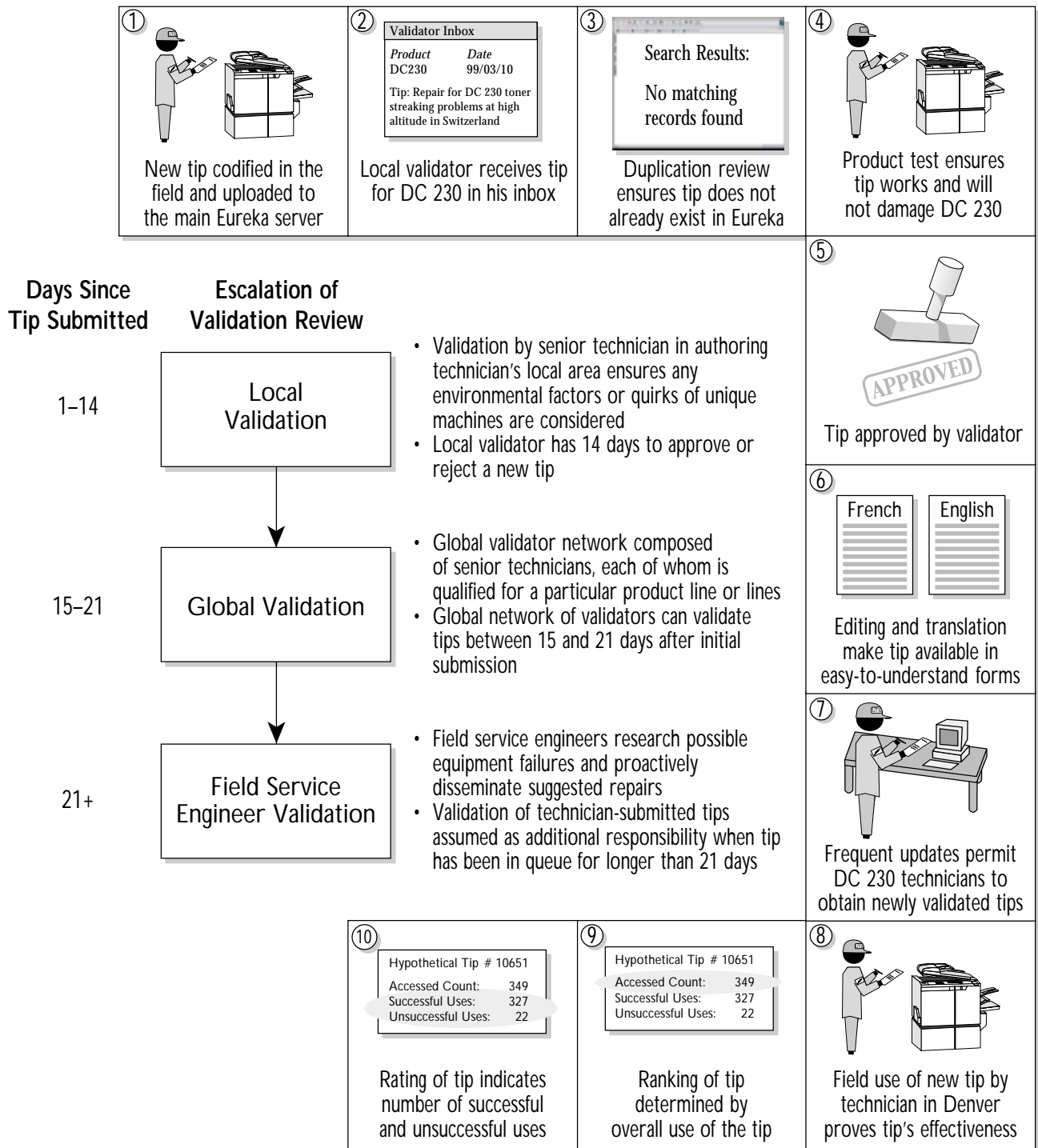
- *Information Consolidation:* The company consolidates five existing customer service databases into a single global database, achieving substantial economies of scale.
- *Technician Submissions:* Company technicians submit new repair practices regarding their particular product service line to the master database via the company intranet.
- *Local Review and Validation:* Senior technicians in the authoring technician's service area review and validate tips within 14 days of submission to ensure that the practices work as described and will not damage equipment. In this manner, technicians most familiar with unique machines and environmental conditions are able to review tips and consult with tip authors if clarification is needed.
- *Global Validation:* Tips left unvalidated after 14 days by local validators are referred for validation to a global network of technicians and field service engineers.
- *Acknowledging Authorship and Review:* The validating technician shares credit for the practice and his or her name is prominently displayed alongside the author's within the practice description.
- *Impartial Oversight:* A “supervalidator” ensures that all validators perform their duties in a timely manner and mediates disputes over validated practices.

Assessment

Proactively Maintaining Information Quality: A formal content-validation process prevents the propagation of inconsistent or incorrect information throughout the enterprise, a critical imperative for mission-critical technical information. The process provides for three levels of review, relying first on local technicians, then on global technicians and ultimately on product engineers to ensure that complex tips are escalated to the appropriate level and are reviewed expeditiously.

Ensuring Accuracy and Relevance

Xerox's Eureka Maintenance and Repair Program



Practice #9: Information-Expiration Mechanisms



Case Study: Arthur Andersen's Business Consulting Division

- U.S.-based, 10,000+ consultant business unit of \$7.3 billion (1999) professional services firm.
- A central knowledge-management group tracks the age of all documents on the Business Consulting intranet. When documents reach a trigger age, they appear in reports that are segmented by regions and communities.
- These “aging reports” are routed to local content managers, who review all documents listed in the report for accuracy, newsworthiness and relevance. Outdated documents are removed from the system or condensed and integrated with other documents to create hybrid content.
- Through the use of age-based reporting, Arthur Andersen has gained the ability to certify that 100 percent of the content on its intranet is worthy of continued publication and that 80 percent of the documents derive from work performed within the last year.
- Approximately 20 percent of all resources contained in KnowledgeSpace are deleted annually.

Practice Description

In an ongoing effort to reduce the amount of dated or irrelevant content on its intranet, the company periodically reviews all documents based on predetermined age-based standards for each document type. Local knowledge managers either certify that the aging document is still of value, retire it to company archives or delete it completely.

Mechanics

- *Time-Coded Resources:* At the time of contribution, all resources published to the company intranet are assigned a default expiration date, which varies by resource type.
- *Age-Based Information Triage:* A custom-developed software tool searches the company intranet for documents with a “create date” or “last modify date” before the designated expiration date, generating a report of aging documents for each area of the intranet.
- *Automated Routing:* The company’s central knowledge-management system routes these “aging reports” to the appropriate content managers at local offices.
- *Local Validation:* Local content managers (or authors) manually review each file and retire dated or irrelevant documents, either by moving them to the company archive or by deleting them entirely, while expiration dates for valid resources are reset.

Assessment

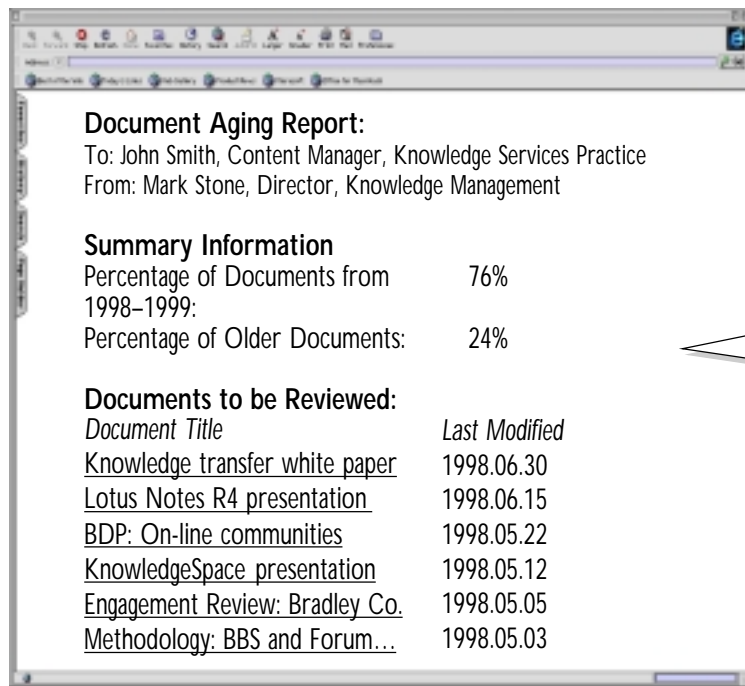
Dynamic Content Verification: A necessary companion to preemptive content validation, age-based reporting and content retirement allows companies to prevent their intranets from being choked with outdated information.

Identifying and Discarding Outdated Content

Age-Based Reporting Enables Local Content Managers to Target Documents in Greatest Need of Review

Arthur Andersen Business Consulting Division Aging Report

(Illustrative)



Intranet-based reports detail the relative age of documents within subsections of the Business Consulting Division's intranet as well as individual documents in need of review

Checklist: Criteria for Document Validation

If the expiration date for a document is to be reset, the knowledge manager or author should be able to answer "yes" to one or more of the following questions:

- ☐ Is the document related to an important client for whom we have little other current work?
- ☐ Is the document an example of innovative work?
- ☐ Is there a lack of similar work captured elsewhere on the intranet?
- ☐ Is the document the best example of work we have done?

In order to delete a document, the knowledge manager or author should be able to answer "yes" to one or more of the following questions:

- ☐ Is the document past the default expiration date?
- ☐ Are there other documents on the intranet that provide more current information on the subject?
- ☐ Is the document incomplete?



Coda

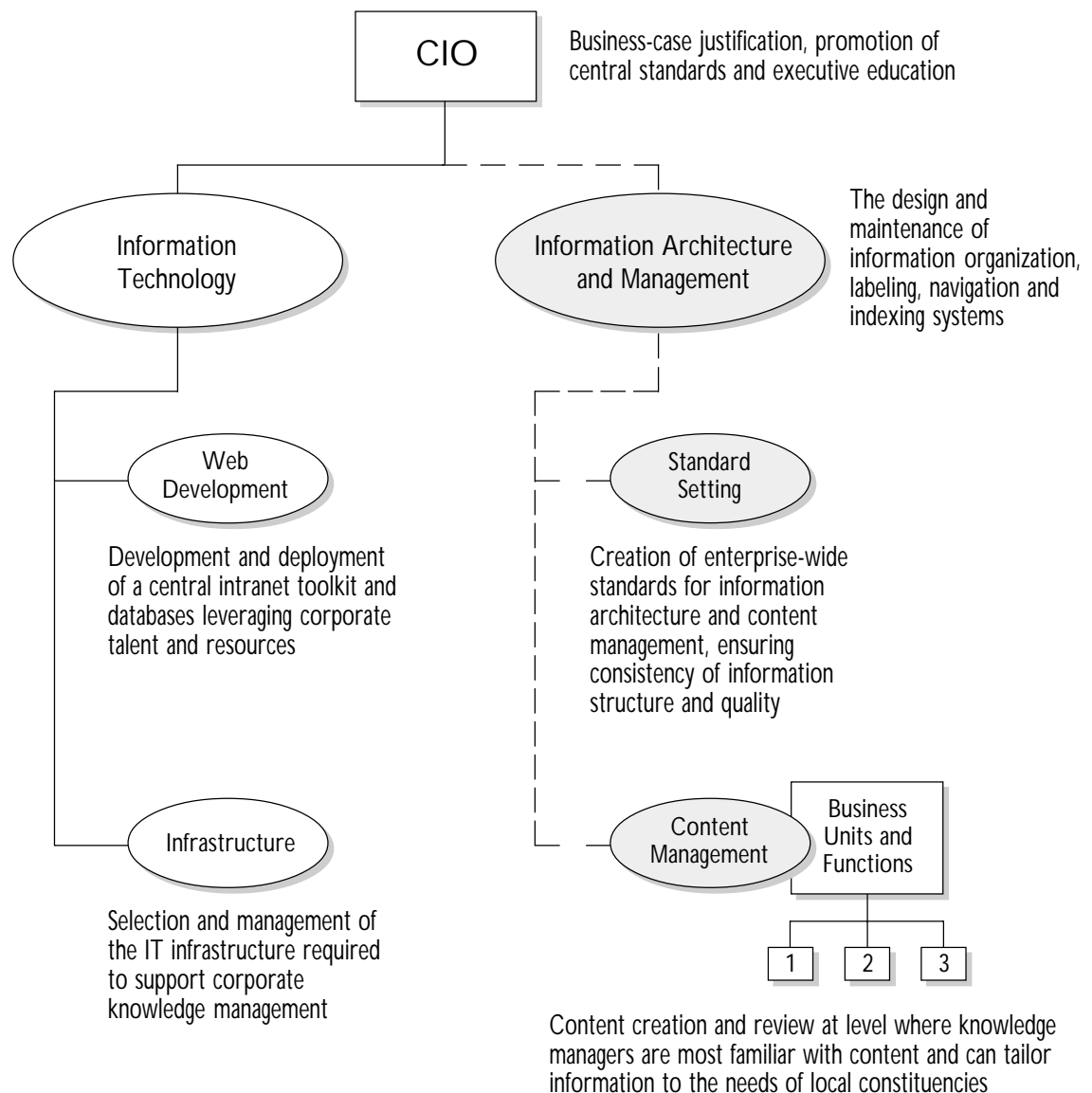
The Role of the Center

- Principled Roles for the Corporate Center
- Metrics for Knowledge Management
- Member Self-Diagnostic

Principled Roles for the Corporate Center

While Working Council research indicates that information architecture and management are critical to the success of corporate knowledge-management initiatives, they are rarely disciplines that CIOs wish to add to their ever-burgeoning list of responsibilities. That said, inattention to these critical disciplines can defeat the CIO's best efforts at providing the technical infrastructure and tools for enterprise knowledge management. Best-practice firms are employing professionals from the emerging field of information science and creating new business functions to design information architectures, manage content and coordinate activities of business units with centrally created knowledge-management standards and procedures. Typically, these new functions collaborate closely—but do not report directly—to the corporate IT function.

Knowledge Management: The Corporate Role



Metrics for Knowledge Management

Throughout the course of its research, the Working Council has compiled the following list of metrics for business case preparation and performance evaluation of knowledge-management intranets.



Revenue Generation

- Percentage of total revenues spent on knowledge-management initiatives
- Ratio of knowledge-generated savings to knowledge-maintenance costs
- New revenue generated by knowledge or knowledge-enabled products
- Increase in revenue per knowledge-enabled employee



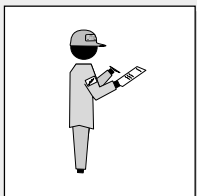
Opportunity Cost

- Time spent by staff looking for relevant information
- Time used by staff to reinvent material previously created (designs, proposals, reports, presentations)
- Customers lost as a result of incorrect or insufficient information



Knowledge Efficiency

- Time saved in new product development/regulatory process
- Time to implement a best practice
- Number of mistakes made twice



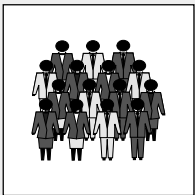
Data Quality

- Percentage of firm knowledge codified on intranet
- Percentage of codified knowledge that is searchable
- Percentage of information needed that employees can find on intranet
- Percentage of information on intranet that is less than one year old
- Percentage of material that is older than one year that has been revalidated
- Number of resources deleted in past month
- Number of resources with electronic attachments



Corporate Intranet Usage

- Total number of intranet hits per time period
- Total number of unique users per time period
- Total number of contributions per time period
- Total number of unique contributors per time period
- Total number of downloads per time period
- Total number of intranet resources (subdivided by document type)
- Resources most often downloaded



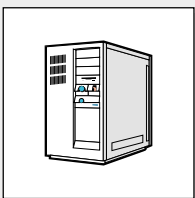
Unit-Level Intranet Usage

- Total number of resources contributed by a specific user community per time period
- Number of downloads per community per time period
- Ranking among top contributing units for the last time period



Individual Knowledge-Sharing Behavior

- Number of resources contributed per time period
- Ranking among top contributors for the last time period
- Usage and peer rating of contributed resources
- Number of citations of contributed resource in other employees' work
- Complete/incomplete status of individual's skills profile
- Date skills profile last edited
- Resume attached to skills profile (Y/N)
- Configuration of customizable portal (Y/N)



Intranet Technical Performance

- Intranet availability (uptime)
- Search response time
- Percentage of returned hits that are relevant
- Internal staff satisfaction rating

Member Self-Diagnostic

Assessing Knowledge

	Yes	No
<i>Facilitating Information Accessibility</i>		
1. Does the company intranet allow both searching and browsing capabilities?	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the metadata we use to organize resources governed by a controlled vocabulary?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are taxonomies structured in order to reflect professional vocabularies and the ways in which different users access information?	<input type="checkbox"/>	<input type="checkbox"/>
4. Does our intranet include a thesaural browser that assists users by highlighting unexpectedly related and relevant information?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does our intranet allow for interface customization by individual users?	<input type="checkbox"/>	<input type="checkbox"/>
6. Can we utilize our intranet to “push” important information to users who would benefit from it?	<input type="checkbox"/>	<input type="checkbox"/>
7. Do corporate decision makers have access to enterprise-level information via intranet “dashboards”?	<input type="checkbox"/>	<input type="checkbox"/>
Subtotal	Yes _____	No _____
<i>Creating Knowledge-Sharing Incentives</i>		
8. Do we have metrics that quantify the contributions of individual employees to the company’s overall knowledge base?	<input type="checkbox"/>	<input type="checkbox"/>
9. Do staff performance reviews include a knowledge-sharing component?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are managers evaluated on the information-sharing activities of their staff?	<input type="checkbox"/>	<input type="checkbox"/>
11. Do we acknowledge the contributions of our employees by highlighting knowledge authorship?	<input type="checkbox"/>	<input type="checkbox"/>
Subtotal	Yes _____	No _____

Management Proficiency

	Yes	No
<i>Managing Content Quality and Relevance</i>		
12. Is the corporate center setting and enforcing enterprise-wide standards for content management?	<input type="checkbox"/>	<input type="checkbox"/>
13. Have we instituted procedures for formally reviewing and validating mission-critical intranet content before it is published?	<input type="checkbox"/>	<input type="checkbox"/>
14. Do we have procedures for the systematic examination of external information resources for integration into our intranet?	<input type="checkbox"/>	<input type="checkbox"/>
15. Can we track intranet content according to date of creation or last update?	<input type="checkbox"/>	<input type="checkbox"/>
16. Is outdated content automatically routed to reviewers for validation or retirement?	<input type="checkbox"/>	<input type="checkbox"/>
16. Do we have explicit decision rules for the retirement or validation of resources that are older than preset expiration dates?	<input type="checkbox"/>	<input type="checkbox"/>
Subtotal	Yes _____	No _____

<i>The Role of the Center</i>		
18. Do we have a dedicated team of specialists on staff or retainer charged with evolving knowledge taxonomies?	<input type="checkbox"/>	<input type="checkbox"/>
19. Do 100 percent of employees have access to the corporate intranet, and do at least 75 percent of all employees use the corporate intranet on a weekly basis?	<input type="checkbox"/>	<input type="checkbox"/>
20. Do we maintain a purpose-specific currency or currencies for quantifying the benefits generated by knowledge-management systems, such as time-to-market or increase in employee productivity?	<input type="checkbox"/>	<input type="checkbox"/>
Subtotal	Yes _____	No _____

Total Yes	Self-Evaluation
15–20	Knowledge-Management Exemplar
10–14	Coordinated Knowledge-Management Effort
5–9	Uncoordinated Knowledge-Management Effort
0–4	Unmanaged Knowledge Assets

Glossary of Terms

Browsing

A method for finding information via visual inspection of resources.

Controlled Vocabulary

A predetermined list that specifies the acceptable terms that can be used to describe a particular information resource. Control of these terms is necessary to solve two common problems: (1) users employ different terms to describe the same resource (oil, petrol, petroleum, gas), or (2) a term can have multiple meanings (musical *pitch*, *pitch* the ball, sales *pitch*, etc.).

Hypertext Taxonomy

Taxonomy composed of hyperlinks that enable the non-sequential retrieval of related information, allowing users to follow associative trails within or between taxonomies in order to quickly locate specific resources. (Also see “Taxonomy” and “Parallel Taxonomies.”)

Information Architecture

The design of information organization, labeling, navigation and indexing systems to support both browsing and searching in order to minimize the time that users spend looking for information.

Information Management

The application of information science principles to the administration of corporate information to ensure that information is captured, formatted, maintained and disseminated across the organization to support decisioning and future use. (Also see “Information Science.”)

Information Science

Generally refers to the study of the production, collection, classification, storage, manipulation, retrieval, dissemination, use and measurement of information. Distinct from Computer Science and Information Systems, which focus primarily on the study of technology and the design of hardware and software, Information Science examines the interaction among people, technology and information.

Intranet

A browser-based information repository that provides access to corporate information and applications to the employees of the enterprise.

Knowledge

Facts or ideas acquired by study, investigation, observation or experience. Within the framework of Information Science, knowledge results from the contextual analysis of information, which can be used repeatedly to inform decision making.

Knowledge Management

The discipline of gathering, organizing, managing and disseminating the corporation’s structured and unstructured information resources in order to improve corporate decision making and maximize staff productivity. (Also see “Structured Information” and “Unstructured Information.”)

Metadata

Assigned information “tags” or key words that help index documents or resources by providing background information, such as creation date, author and date of last update. Metadata is not necessarily visible to the user but rather works in the background to ensure that documents are properly indexed for searching. It can be stored in fields in the document itself or in a relational database, which “fills” document fields with associated metadata when a particular document or resource is retrieved by a user.

Parallel Taxonomies

Taxonomies that provide multiple, independent ways of classifying information that may fall logically into more than one category. (Also see “Taxonomy” and “Hypertext Taxonomy.”)

Portal

Generally refers to a Web site that groups multiple information resources and services—E-mail, forums, search engines, documents and hypertext links to other documents and Web sites. Many Web portals are organized around topics and communities. Corporate intranet portals typically provide access to the documents, forms and applications that employees require to perform their jobs. (Also see “Intranet.”)

Searching

A method for finding information using keyword location systems (search engines) that index resources in an information repository. Common search types include known-item, exploratory and comprehensive searches.

Structured Information

Information that is created and maintained in distinct and inflexible formats. Common examples include financial transaction records and operational databases.

Taxonomy

Broadly stated, the science of classification. Information Science adopts the concept as the orderly and systematic classification of information into groups with similar characteristics, as related to a single point of reference. (Also see “Parallel Taxonomies” and “Hypertext Taxonomy.”)

Thesaural Browser

A hybrid searching and browsing tool that indexes all available corporate resources and provides users with a comprehensive list of resources that have synonymous, hierarchical and associative relationships with a particular search term.

Unstructured Information

Information that is produced and stored in multiple, non-specified formats. Common examples include E-mail documents, memos and reports.

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